SOAP

SANITARY CHEMICALS

"—call D & O"

—and who hasn't been stuck or hampered by some of today's many perfuming problems? We of Dodge & Olcott Company are meeting many of these perplexities by supplying the trade with important, necessary requirements of Aromatic Chemicals, Essential Oils, and Perfume Compounds. Most likely our 144 years of perfuming experience can likewise help YOU through the current emergencies with "flying colors." "Call D & O."

DODGE & OLCOTT COMPANY

100 VARICK STREET · NEW YORK, N.Y.

BOSTON · CHICAGO · PHILADELPHIA · ST. LOUIS · LOS ANGELES

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D.O

ESTABLISHED 1798

August 1942

An Open Letter to

Hitler and Hirohito

Look out fellows, America's on the march! And when we revert to side crankers and linen dusters so that new automotives can be used to bolster our military strength . . . well, knowing as you do how we love our comforts, you must realize we're after your scalps in dead earnest. Yes, dead earnest!

Sure, we'll ride in these noisy and antiquated old rattletraps if it'll help! You see, everybody here is out to get you . . . AND DON'T THINK WE CAN'T DO IT!

As for Fuld Bros. . . . we too are geared 100% to that goal, and are operating at peak efficiency to fulfill the nation's health requirements.

Fuld Brothers

FULD SELLS JOBBERS ONLY! • FULD MAKES IT FOR THE LEADERS

702 South Wolfe Street, Baltimore, Maryland • 2444 East 8th Street, Los Angeles, California

Liquid Soaps, Floor Seals, Floor Treatments, Deodorant Blocks, Liquid Deodorants, Plumbing Specialties, Special Cleaners, Self-Polishing Waxes, Powdered Waxes, Oil Soaps, Liquid Cleaners, Disinfectants, Insecticides, Metal Polishes, Furniture Polishes, Deodorant Block Holders, Soap Dispensers.

Du Pont Aromatics

MEET A WARTIME NEED

• *From American forests come these domestic products to help replace Rosemary, Siberian Pine Needle Oil, Thyme and Spike. All of these products are available, of high purity, constant of odor and stable in price.*

ISOBORNYL ACETATE, $.80 lb.* *A true pine needle self odor as well as a valuable piquant ester for use in compounds. It is stable in soap and especially useful as a deodorant in sanitary specialties.*

ISOBORNEOL, $.90 lb.* *Crystalline fixative of rich, deep odor which is a component of the odors of natural rosemary, spike, eucalyptus, thyme and other oils.*

DIPENTENE S.D., $.15 lb.* *A sweet terpene produced in the Terpineol synthesis, useful in any compound simulating natural oils.*

TERPENOL A 3 N, $.20 lb.* *Contains high proportion of oxygenated terpenes of a wide range of volatilities; hence, can be used like an essential oil by itself or in a compound. Blends with oil of thyme.*

TERPINOLENE 4-4, $.22 lb.* *Contain many of the ingredients of eucalyptus*
TERPINOLENE 2-2, $.18 lb.* *oil. Blend with Camphor Sassafrassy oil.*

* *Drum lot prices, F.O.B. New Brunswick, N. J.*

DU PONT
REG. U.S. PAT. OFF.

Aromatics

E. I. DU PONT DE NEMOURS & COMPANY (INC.), ORGANIC CHEMICALS DEPARTMENT, AROMATICS DIVISION, WILMINGTON, DELAWARE

Volume XVIII Number 8

SOAP and SANITARY CHEMICALS

Reg. U. S. Pat. Office

AUGUST
1942

SANITARY Products Section, which forms a part of every issue of SOAP, begins on page 71.

MEMBER AUDIT BUREAU OF CIRCULATIONS

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254 WEST 31st STREET NEW YORK, N. Y.

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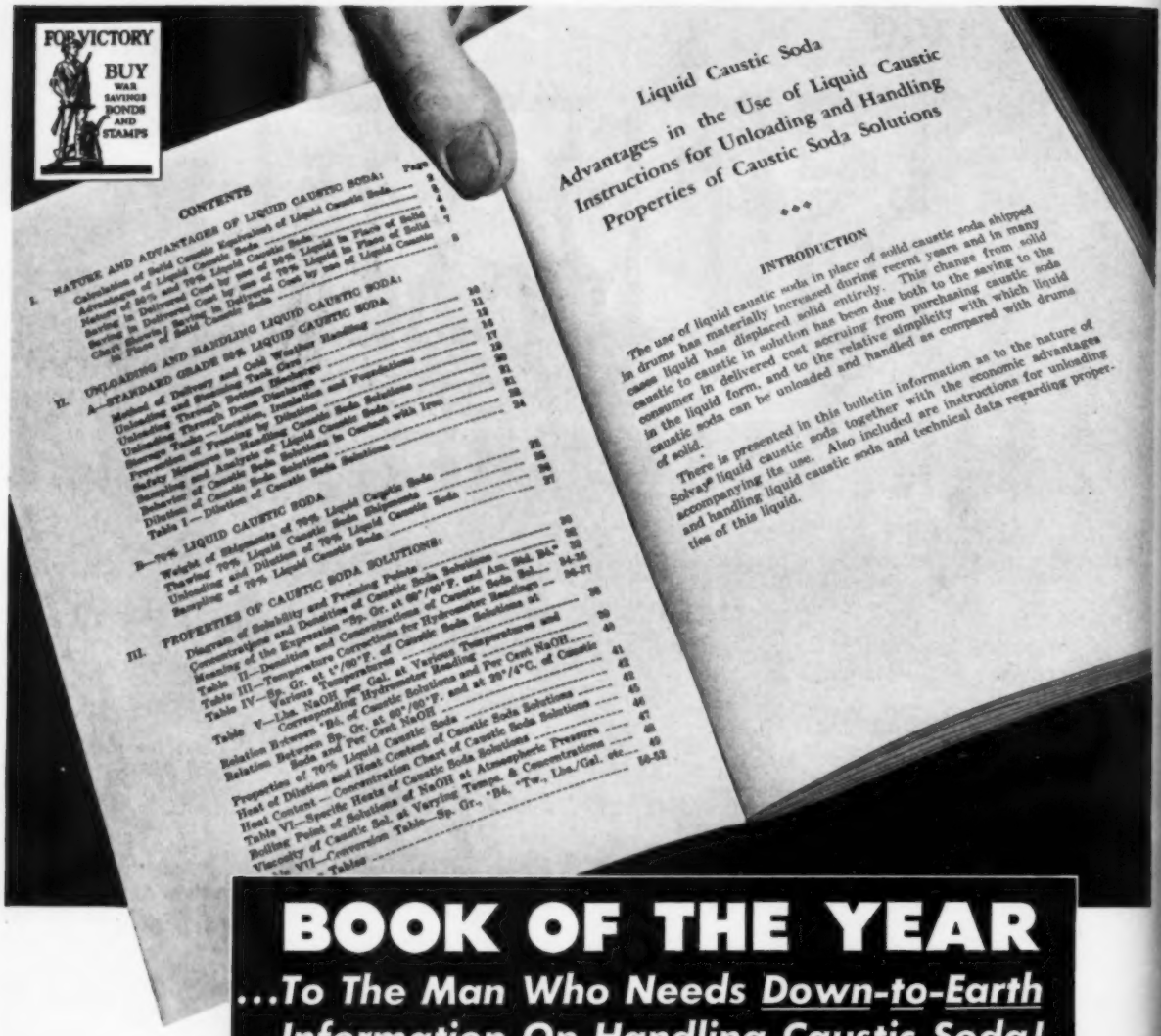

BOOK OF THE YEAR

...To The Man Who Needs Down-to-Earth Information On Handling Caustic Soda!

If you are a technician or plant operator who is now "taking over" an assignment which necessitates a more specific knowledge of Caustic Soda than you previously required, *then write today for Solvay Technical Service Bulletin No. 6.*

This bulletin contains time-saving, factual information from which all sales talk has been eliminated. It is full of important tables, charts and other data on the handling of Caustic Soda. It is information which goes straight to the point... helps you improve efficiency, reduce man hours and increase production speed.

Solvay Technical Service Bulletin No. 6 on Liquid Caustic Soda is one of the series of Solvay Bulletins which are constantly being revised on the basis of new findings. For years this technical literature has had the recognition of plant operators, engineers and scholars who realize that such vital operations data concerning alkalies can only originate out of the breadth of accumulated experience Solvay has gained as America's oldest and largest manufacturer of alkalies.

If you don't use Caustic Soda, then send for any of the OTHER SOLVAY BULLETINS listed below, which pertain to your work.

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

40 RECTOR STREET NEW YORK, N. Y.

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Use and handling of Caustic Soda • Analysis of Alkalies • Soda Ash Handling • Alkalies and Chlorine in Water Treatment • Analysis of Liquid Chlorine and Bleach • Water Analysis • Calcium Chloride in Refrigeration • Road Surface Stabilization • Analysis of Calcium Chloride and Limestone

f Liquid
mestone

t, 1942

ADVERTISEMENT—*This entire page is a paid advertisement.* *Prepared Monthly by U. S. Industrial Chemicals, Inc.*

U.S.I. CHEMICAL NEWS

August ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1942

New U.S.I. Product Now Available for Experimental Work

Ethyl Sodium Acetone-Oxalate Displays Interesting Reactions

Ethyl sodium acetone-oxalate is now available from U.S.I. in small quantities for experimental investigation of the potentiality of this interesting and reactive chemical.

Compound has the formula:

$CH_3COCH{=}C(ONa)COOC_2H_5$

Among the known applications of ethyl sodium acetone-oxalate, it may be readily condensed to symmetrical hydroxytoluic acid, $C_6H_3COOH(1)OH(3)CH_3(5)$.

Another of its possible reactions is with phenylhydrazine to give phenylpyrazolecarboxylic ester.

U.S.I. invites inquiries on this unusual chemical, which can be produced commercially if demand develops.

This glass model of a distillation column is used in U.S.I.'s laboratories to aid in studying processes that take place in an actual production unit.

Quinine May Be Omitted From N.F. Preparations

WASHINGTON, D. C.—In order to conserve quinine stocks, the National Formulary has issued an interim revision, permitting manufacturers and pharmacists to omit quinine from certain preparations. To replace Elixir Iron Quinine and Strychnine Phosphates, two new formulas have been issued for Elixir Iron and Strychnine and Elixir Iron and Strychnine Phosphates.

U.S.I.'s Chicago Office Moves to New Quarters

The Chicago Sales Office of U.S.I. is now located in new and more convenient quarters at 624 South Michigan Avenue.

Carbon Dioxide Safeguards Planes, Ships, and Plants

Liquid Form Extensively Used to Prevent and Extinguish Fires And as a Means of Inflating Life Belts, Jackets, and Rafts

Carbon dioxide, widely familiar as a means of supplying sparkle and palatability of carbonated beverages, and in its solid form as a highly efficient refrigerant, is finding constantly increasing utility in safeguarding the production and operation of war equipment, particularly airplanes and ships, where its properties are especially valuable in the prevention or extinguishing of fires.

Carbon dioxide is readily recovered as a by-product of alcohol manufacture, and after cleansing and purifying, it is liquefied by compressing and cooling, after which it is filled into cylinders or made into the solid form ("DRY-ICE").

Carbon dioxide as a liquid can exist only under pressure. When the pressure is released, it boils off rapidly into the gaseous form and snow, the snow being formed by self-refrigeration from the expanding gas.

Use in Fire-Fighting

Fires, particularly those of paint, lacquer, grease, oil, gasoline, alcohol, or electrical origin, are most effectively put out with carbon dioxide. The liquid carbon dioxide is discharged from a siphon cylinder through a flexible hose and nozzle directly on the fire. The gas acts as a blanket between the fire and the surrounding air, and the fire is smothered by lack of oxygen. In addition, the carbonic snow and extremely cold gas cool the fire below the ignition point.

Airplane engines are protected in this way by carbon dioxide systems. Carbon dioxide released in the engine housing immediately extinguishes any fires resulting from leaky oil or gasoline lines. Planes on the ground can also be protected against fire in this way. Crash trucks equipped with a battery of cylinders can discharge sufficient carbon dioxide to envelop an entire burning plane.

Gasoline tanks are protected against fire or explosion on combat planes by flooding the space above the gasoline with carbon dioxide,

(*Continued on next page*)

U.S.I. Consolidates Its Two News Advertisements

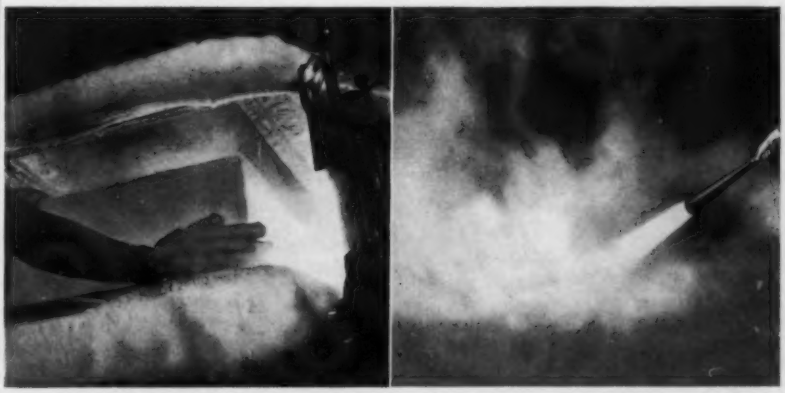
Effective with this issue, U.S.I.'s two monthly news-type advertisements, U.S.I. CHEMICAL NEWS and U.S.I. ALCOHOL NEWS, will be combined into a single advertisement, which will be known as U.S.I. CHEMICAL NEWS. This advertisement will be printed on the characteristic blue stock already familiar to readers of U.S.I. CHEMICAL NEWS, and will appear in all publications in which either of the advertisements has appeared in the past.

This step has been taken in recognition of the growing interrelationship among the various phases of the chemical and chemical-consuming industries. It is hoped that the combined advertisement will provide more effective news coverage of these industries, together with the proper balance among the interests of its readers.

Inquiries Invited on Many Synthetic Organic Chemicals

Inquiries are invited by a chemical manufacturer relative to the production of synthetic organic chemicals, such as the halides, ethers, esters, acetals, etc., of the following hydroxy compounds: glycerine, trimethylene glycol, allyl alcohol, ethanol, and other common alcohols; as well as derivatives of acetylene, ethylene, and propylene.

U.S.I. will gladly refer inquiries on these chemicals to the manufacturer.



(Left) In solid form ("DRY-ICE") carbon dioxide is extensively used for refrigeration purposes. (Right) Liquid carbon dioxide is employed to good advantage in extinguishing fires, particularly in cases where water cannot be successfully employed.

August ★ **U.S.I. CHEMICAL NEWS** ★ 1942

Acetone Used as Solvent In Process for Molding Of Colloidal Materials

PARIS, France — Cellulose ethers, synthetic resins, and other colloidal materials can be molded inexpensively by a new process involving the use of acetone, it is claimed in a patent granted to two inventors here.

In general, the procedure consists in preparing a mixture consisting of two phases: a more or less viscous solution of the colloidal material in a volatile solvent, such as acetone; and grains which are in a state of incipient dissolution by the solvent.

When such a mixture is poured into molds, the liquid part is said to turn quickly into a gel, as a result of the presence of the imperfectly dissolved grains, which absorb the solvent. The process is described as being especially adaptable to the molding of hollow objects, whether translucent, transparent, or opaque.

Drying is very even, according to the patent, and the finished objects closely reproduce the shape of the mold. Molds may be made of inexpensive materials, such as plaster, if desired.

Polymerized Alcohols Yield Pour Depressors

NEW YORK, N. Y.—Lower aliphatic alcohols can be polymerized by Friedel-Crafts catalysts to form effective pour depressors for waxy lubricating oils. The polymerization products are useful also for reducing the wax content of waxy oils.

This discovery has been made by two inventors here, who have received a patent on the polymerization products. Typical examples of alcohols which can be used include ethanol, butanol, and amyl alcohol.

Ethanol Protects Viscose Yarns During Mercerizing

The textile industry has found ethanol useful in protecting regenerated cellulose yarns, such as viscose, in combinations with cotton which is to be mercerized. The addition of one gallon of ethanol or SOLOX (U.S.I.'s ethanol-type solvent) to 100 gallons of the mercerizing caustic liquor has the effect of preserving the luster and tensile strength of the viscose, it is reported.

Casein Product Dilutable With Organic Solvents

BAINBRIDGE, N. Y. — A casein product in solution form can be diluted with organic solvents, such as ethanol, acetone, and ethylene glycol, without coagulating, it is announced by a manufacturer here. Because films of the material have good flexibility and resistance to water and grease, maker suggests its use as a shellac substitute, top coating, greaseproofing material, ink vehicle, wood sealer, impregnant, and similar applications.

Uses of Carbon Dioxide

(*Continued from previous page*)

thus forcing out the air normally present. The tanks thus protected cannot be set on fire even if struck by bullets.

Shipboard Uses

Carbon dioxide fire-fighting systems are installed on Navy vessels to protect electrical installations, engines, and inflammable materials. These systems usually operate automatically at a fixed maximum temperature and for a rapid rate of temperature rise. Fires in any shipboard area protected by carbon dioxide can be extinguished in a few seconds, as the released gas quickly reaches into every nook and corner.

Carbon dioxide systems are also used to good advantage in the prevention of fires in production plants, particularly where inflammable materials are involved.

Inflated Appliances

Appliances inflated with carbon dioxide have proved to be excellent life-saving devices at sea. Life belts, for example, can be quickly inflated when needed by pulling a small cord attached to the end of a lever arm, puncturing a small carbon dioxide bulb. Inflatable life-saving jackets operate on the same principle, which is also applied in rubber life rafts. These rafts can be rolled up to occupy little space, so that they can be conveniently stored on an airplane, for example. Rubber bags inflated with carbon dioxide are used to enable planes to float on the sea in case of an emergency landing.

A novel application for carbon dioxide is its use for bullet propulsion in practice guns. The bullet is forced out of the gun by the pressure of the carbon dioxide as it expands. This use in practice guns permits saving gunpowder for actual combat purposes.

Liquid and solid carbon dioxide is manufactured by U.S.I. and distributed by Pure Carbonic, Incorporated.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A stripping lacquer can be applied to the surface of metal or ceramics to protect finish and prevent scratches or grease marks, according to the manufacturer. Lacquer forms film that is almost completely transparent, permitting visual inspection of covered part. It can be readily peeled off and dissolved for re-use, it is claimed. **(No. 600)**

U S I

A soap antioxidant is now being produced from raw materials that are available in ample quantities, it has been announced. It is described as a light gray powder that does not affect soap color, odor, or other properties. It may be introduced in the form of an alcoholic solution.

U S I **(No. 601)**

A layout stain can be used on brass, copper, steel, aluminum, and other metals, contains no acids or corrosive ingredients, according to the manufacturer. Its use is said to relieve eye strain and assist the workman in following layout accurately. **(No. 602)**

U S I

A protective cream is said to be compounded especially to protect the skin from the action of arsenic, lead, and their compounds. When applied, it forms a thin, invisible film, which can be removed with soap and water. **(No. 603)**

U S I

A liquid glue is said to be free from objectionable odor, and to be useful for reinforcing weaker adhesives in the manufacture of coated or gummed paper, finishing textiles, shoe operations, and other applications. **(No. 604)**

U S I

Rapid filter media for viscous liquids, such as lacquers or varnishes, are formed directly from carded cotton web without weaving, by bonding the fibers onto a gauze backing. Filters are said to be low in cost, and are discarded after use. Used in front of filter paper, they greatly increase length of cycle, it is claimed. **(No. 605)**

U S I

A novel tinless container for creams, ointments, and pastes is said to permit exhausting of contents by turning top portion of tube. Tube is described as sufficiently firm to eliminate need for carton, and as adaptable to present tube-filling machinery. **(No. 606)**

U S I

A pure alkyd resin is designed specifically to meet the requirements of Holabird Quartermaster Depot Specification HQD-ES No. 680, it is reported. Resin is said to give the necessary balance among drying time, flexibility, resistance, and low final paint cost. **(No. 607)**

U S I

A new fluorophotometer is described as a complete self-contained model, especially designed to accelerate routine work in the determination of vitamins and minerals. It eliminates the amplifier and stabilizer incorporated in other models, and uses a simple electrical circuit. **(No. 608)**

U S I

A midget pump for handling hot liquids up to 500° F. is reported to have many industrial, pilot plant, and laboratory applications. Maximum pressure is 21 pounds per square inch, and maximum volume 7½ gallons per minute. Pump is powered by a 1/20 HP motor. **(No. 609)**

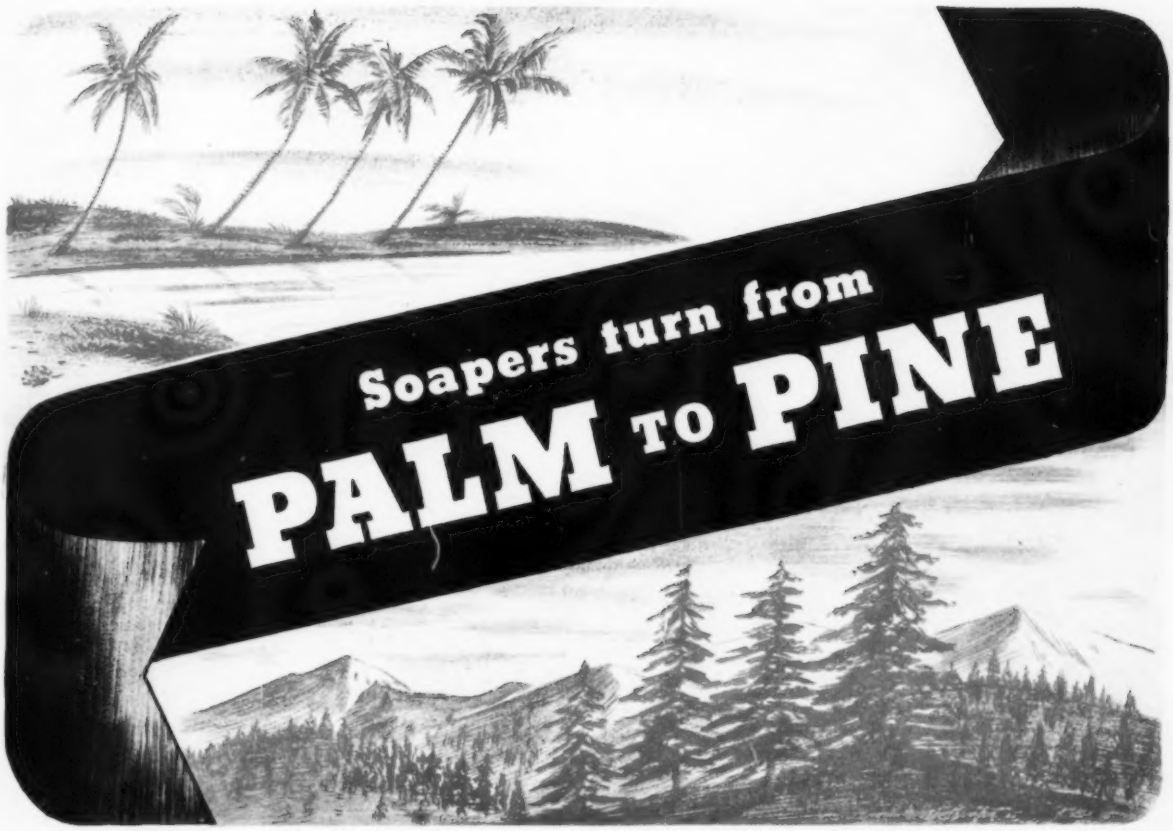
Countless Miles of Floors

ARE MAINTAINED BY "BEAMAX"

YEARS OF USER-SATISFACTION ARE BEHIND THIS PRODUCT

"BEAMAX" is well known to thousands of users as a lustrous-drying Liquid Wax that always delivers full value. Economical—because a thin coat dries in a few minutes to a hard, lustrous beautiful finish, without polishing. It smooths itself. All types of floors—including rubber, wood, linoleum, rubber tile, asphalt tile, mastic, terrazzo and cement — are easily kept clean by sweeping or using a dry mop. "BEAMAX" will not solidify in storage. It has no unpleasant odor. Samples and prices of "BEAMAX" will be sent to you on request.

THE DAVIES-YOUNG SOAP COMPANY
DAYTON, OHIO



Replace imported vegetable oils with clean, uniform,

HERCULES WOOD ROSINS

As the shortage of imported vegetable oils grows acute, more and more Hercules Wood Rosin and rosin derivatives are going into soaps of all kinds.

The preference for Hercules Rosins is based largely on superior cleanliness and uniformity, which result from processing in large, modern plants where chemical and physical properties are always under accurate control.

The highly-refined grades run from G to WG inclusive on the U. S. Standard Scale.

Tell us the kind of soap in which you wish to replace vegetable oils with rosins, and we will give you experience-data that should prove helpful.

NAVAL STORES DEPARTMENT

HERCULES POWDER COMPANY

INCORPORATED

961 MARKET STREET · WILMINGTON, DELAWARE

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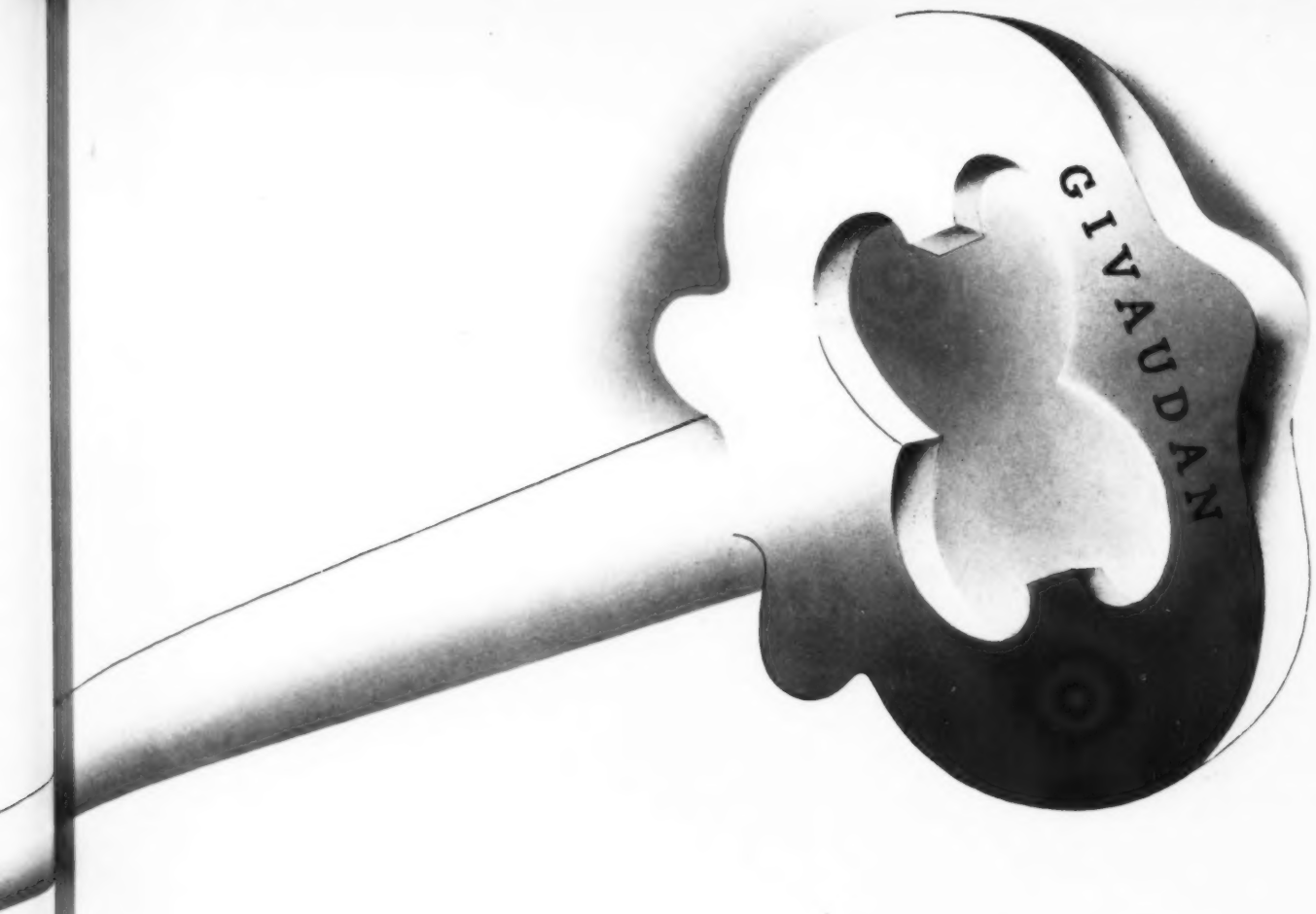
RESEARCH



The master key

Should your organization find its capacity for production handicapped by shortages in certain basic perfume materials, Givaudan may be able to offer helpful assistance on your manufacturing problems. For Givaudan has contributed to the success of many of the most popular and original toilet preparations.

Whether your line embraces soaps, shaving cream, toilet water, cosmetics or perfumes, our knowledge should prove valuable to you now. Our background has been unusually broad, and our personnel—perfumers, chemists and research staff—is experienced in developing aromatics for all types of products.

In seeking a satisfactory solution to today's problem of producing toiletries of merit, in the absence of materials formerly employed, this experience of Givaudan-Delawanna may be the Master Key you require, complementing your own creative skill. Why not consult us? We'll be glad to help in the development of products worthy of your name.

GIVAUDAN-DELAWANNA, INC.

330 WEST 42ND STREET, NEW YORK, N. Y.

AS THE EDITOR SEES IT

TRUE to its promise to the soap industry that it would seek a quick means of relief from the price squeeze in which the industry found itself as the result of the establishment of ceiling prices, the OPA "rolled back" the price for inedible tallow one cent per pound. This will afford some much-needed relief to many soap manufacturers, particularly those units producing regular laundry and toilet soaps. This, of course, represents the bulk of soap production of the country. But to others, the "roll-back" of tallow prices will have little or no effect, and they will still find themselves in hot water, will still face ceiling prices for their soaps disproportionate to fat and oil costs.

Irrespective of the effect or lack of effect of this move to relieve the pressure on all units of the soap industry, the OPA is to be commended for the promptness of its investigation and action. We feel certain that where other situations continue to exist and which have been termed inequitable,—the ceiling on crude glycerine, for example, and the plight of some manufacturer of specialty soap products,—that they will also receive consideration by the OPA in the near future.

SOAP sales dropped 15.8 per cent during the second quarter of 1942 as compared with the same period of 1941. But so great were the sales of soap for the first quarter of 1942,—the greatest in history,—that figures for the first six months of this year showed an increase of 8.1 per cent over the first half of 1941 in spite of the severe second-quarter slump this year.

These figures from the Association of American Soap & Glycerine Producers,—particularly the sharp decline for the April-June period,—were no great surprise to soapers. To some, the news was comforting in that it confirmed the hope that their competitors, as well as they, had been taking it on the chin. And, with price ceilings and all that, it will probably be many a day before we see soap sales again match the first quarter of 1942.

AS SEEMS to have become custom in the matter of governmental regulation, soap products are Number One on the list in the issuance of Commodity Practices Regulations by the OPA. Boiled down into plain street English, in order that the American public may not be gypped by the soap industry in the matter of soap quantity and quality, all soap products were frozen on July 17 as to size of cake or package, and as to quality or "serviceability" of the product. Included in this quality definition is the problem of lather.

The reason for this freezing order is explained in a statement by Leon Henderson, Administrator of the OPA: "Unlimited freedom to change the weight and quality of household soap thus increases the possibility of evasion of the maximum prices established by the general maximum price regulation." In other words, if soapers are so inclined it would be easy for them to circumvent the price regulations under the

guise of changing package size or shape or by loading up their soaps with fillers or by some other means. He sees sharp competition in the industry encouraging some manufacturers to use trickery to gain an advantage, and notes that this may force a similar action by their competitors.

Under present ceiling prices, the lot of most soapers is not going to be easy even though there has been a roll-back in some fat prices. Freezing of soap cake and package sizes may not entail too much hardship, but the fixation of serviceability may bring any number of problems. The shortage of coconut oil alone is quite significant here. In spite of the fact that several soapers contend they have licked the coconut-lather problem, we note soaps are now coming through to consuming channels lacking the lather quality and quantity to which we have been accustomed in the past. If this is the standard of lather to be taken as of July 17, well and good. If not, we feel that the problem is going to be a tough one, both for the soap industry and the OPA. And suppose there develops an acute shortage of other raw materials necessary to maintain a *status quo* in soap quality? What happens then?

For the enforcement of this latest regulation imposed upon soap manufacturers, we fear that it will require a staff of masterminds plus a crystal ball or two. And it might not be surprising to see some manufacturers withdraw certain products from the market for the duration.

FOR being rather pessimistic in our editorial comments last month in regard to the possible success of the household grease collection campaign, we have been taken to task by several soapers. After reading the evidence filed against us, particularly in regard to the success of the campaign in Chicago, we begin to feel that may be the ultimate aim of the campaign,—a quarter-billion pounds of grease per year,—may be attained.

That the quantity collected thus far has exceeded expectations of the campaign's sponsors, might still be answered by initial enthusiasm while the heat of newspaper publicity has been on at full blast. But the experience in Chicago over a six months period would indicate otherwise. In that city, the grease collections have grown steadily. Surprising indeed has been the quality of the grease collected thus far, being unusually light in color and low in foreign matter. Frankly, we had in mind that the quality itself would not arouse too much enthusiasm among the renderers. On this count, we have been wrong also. But right or wrong, let there be no mistake in regard to our attitude toward this entire grease collection plan,—we are for it one hundred per cent and intend to do everything possible which we can to aid its complete success.

WHILE we are on the subject of things for manufacturers and others to worry about, let us take a look at the manpower situation. A year ago, raw material shortages were worry No. 1,—but industry has been quick to solve many of these problems except perhaps in the case of some basic items, such, for example, as metals. Today, inability to hire workmen with proper qualifications has become acute, and is likely to become more acute as the number of workers available for employment grows steadily smaller. Plants working directly on war materials continue to draw workers from other lines by the simple expedient of offering higher wages. The march of men to the armed forces is a one-way trek as far as the present labor situation is concerned,—and once a man is in the Army, he ceases to be a workman for the duration. So quite obviously, man power has become our No. 1 problem. Rather fortunately for the soap industry today, its labor needs are small compared to most industries of equal dollar volume.

VEGETABLE OILS of BRAZIL

By John B. Gordon

BABASSU oil is not the only high lauric acid oil produced in North Brazil. Murumuru oil has definite possibilities as respects a future large supply, but since the nuts from which it is made come from the Amazon Valley, no production in excess of a few thousand tons a year can be anticipated for the present. The labor problem is the chief impediment to the harvesting of a larger volume of murumuru nuts. The nuts present no difficulty in cracking, their shells being relatively thin. The Brazilians have several types of mechanical crackers which do the work efficiently.

Ucuuba tallow, while possessing only about 12.6 per cent lauric acid content, is nevertheless of interest as it has a myristic acid content of in excess of 63 per cent. It should, therefore, be useful for some of the same purposes for which the higher lauric acid oils are employed. The method of harvesting this seed is interesting. The ucuuba tree grows along the Amazon and its tributaries in areas subject to inundation. Its small spheroid shaped seeds fall to the ground and remain there until the rainy season. Since the seeds float readily, the rising waters pick them up and away they move downstream where women and children dip them out with strainer like devices attached to the ends of poles. Four to five thousand tons per year are normally gathered, although the crop for the current year seems to have been a failure. Supplies which the crushers at Belem had on hand were quite limited.

The Amazon Valley is the source of other oilseeds and nuts, such as andiroba, pracaxi and curua palm kernels, the latter yielding an oil high in lauric acid. Volume of production is small, however, and will remain so until labor is available to harvest these and numerous other oilseeds in this vast oilseed storehouse of nature.

Copies of the official report of the United States Vegetable Oil Mission to Brazil will shortly be released by the Office of the Inter-American Development Commission, Room 7898C, Commerce Building, Washington, D. C. Soap makers interested in further details concerning the possible future contribution which Brazil may make to supplying American fat and oil needs may secure copies of the report by writing to the Commission.

Tucum nuts, mainly the product of the State of Piaui, produce an excellent high lauric acid oil with an unusually high melting point, but this dry area palm is not found in dense stands as is the babassu. Practically all the kernels produced are now exported and present exports of around six thousand tons per year cannot be materially increased.

Ceara, the next state down the coast, is the oiticica and carnauba palm state. It is in the dry, semi-arid region of north Brazil, which has its beginning in Piaui and extends well on down into Bahia. The U. S. Vegetable Oil Mission went through this section by automobile and the sight of the big green oiticica trees was always welcome in these areas where vegetation is apt to be sparse.

The oilseed crushing plants of Fortaleza, the capital of Ceara, compare very favorably with crushing plants in the United States. Most of these plants, because they are working principally with a high-priced oilseed, oiticica, utilize both expeller and solvent extraction equipment. The oiticica crop being a failure this year, the oil mills of Ceara are now working mainly on cottonseed and castor beans.

The oil mills of the State of Rio Grande do Norte and Paraiba work mainly on cottonseed along with some oiticica seed. Paraiba has at Cabedelo, the port of Joao Pessoa, its capital, the only bulk loading facilities for vegetable oils to be found in north Brazil. The equipment belongs to the firm of S/A Industrias Reunidas F. Matarazza and is used for shipments of bulk cottonseed oil, which move principally to the United States. Oilseeds crushers in the State of Pernambuco mainly crush cottonseed and castor beans along with small quantities of babassu kernels and ucuuba seed, which they bring down the coast from Maranhao and Belem.

At Racife, the capital of Pernambuco, there are four soap factories. Although the Vegetable Oil Mission had inspected numerous soap factories all through the north of Brazil, two of the soap factories at Recife were the first we encountered which were recovering glycerine. Neither of them

Ouricuri palms, source of ouricuri wax and kernels, have distinctive flat appearance. The small stalks of nuts may be seen on ouricuri palms both at left and right side in picture.

refine glycerine but ship their crude to refineries at Rio de Janeiro and Sao Paulo. Only 17 soap factories in Brazil recover glycerine and the total production for all Brazil is only about 1,500 tons.

In a soap making plant at Recife the Vegetable Oil Mission received one of the real surprises of its trip. On passing through the soap plant we saw slabs of soap obviously made from unbleached palm oil. When asked where he purchased this palm oil the soap maker advised us that he had bought it in the State of Bahia. This was our first intimation that palm oil of the type produced in the Dutch East Indies and on the West Coast of Africa (*Elaeis guineensis*) is produced in sufficient quantity in any state of Brazil to be shipped long distances from the point of origin, which would indicate a considerable supply. Afterwards on examining statistics of exports, we found that it had been disguised under the name "dendz," the Portuguese name for the African type of palm.

INSPECTING the palm oil developments in the State of Bahia was one of the high lights of the Brazilian-American Vegetable Oil Mission's trip through seven thousand miles of Brazil. Palm trees of the African variety have been growing in Bahia for well over a hundred years. The Portuguese probably brought them there from their settlements in Africa. It is estimated that there are 1,500,000 palm trees in the State of Bahia. Only a small proportion of them are in plantation developments, however. Until fairly recently the growing of palm trees has been a "backyard" enterprise.

In the more northerly areas of Brazil the "caboclo" wants a few mangoe trees growing in his yard for their shade and fruit. In Bahia he wants palm trees. The fruits are harvested and the palm oil, which is recovered by boiling the pulp in a kettle, is used for home culinary purposes. The palm kernels he sells to crushers in Salvador. This means that whereas the larger proportion of the palm kernels produced reach the market, the bulk of the palm oil is consumed at home. This is the same as on the West Coast of Africa where the marketings of palm oil fall far below the tonnage of palm kernels which reach the market.

The State Government of Bahia, realizing the great potentialities in palm oil development on a plantation scale, is endeavoring to encourage this form of enterprise. The State Department of Agriculture, under the direction of an able Secretary of Agriculture, Dr. Joaquim Medeiros, who received much

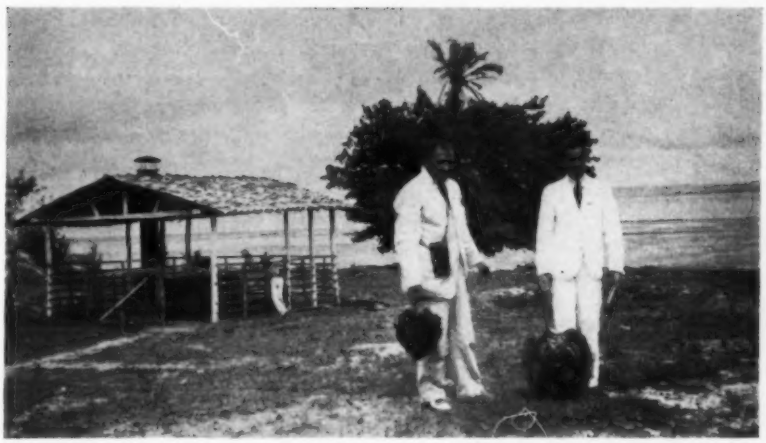
The macauba palm is widely distributed through State of Minas Gerais. Pile of macauba palm fruit (right) awaiting processing at plant of oil mill in Belo Horizonte. Left to right in picture: Dr. George S. Jamieson of U.S. Department of Agriculture, Chairman of the U.S. Vegetable Oil Mission for Southern itinerary; Mr. Gordon, and Brazilian friend.

of his agricultural training in the United States, is leading the way with a plantation of its own of 37,000 trees on the Island of Itaparica in All Saints Bay. On it is what was originally intended to be a model palm oil factory, but the equipment came from Germany and the advent of the war prevented shipment of essential parts of the plant. It is functioning, however. The palm oil which it produces is sold in Bahia.

There are also some privately owned plantations on the Island of Itaparica but the sum total of all the trees under cultivation on a plantation basis here and elsewhere in Bahia will not exceed 300,000. However, if they make a go of it financially, other plantations will be developed and Brazil will some day be an important source of palm oil. Frankly, as far as present day volume of exports are concerned, it should be stated that while United States buyers should be able to pick up small shipments of 25 to 50 tons from time to time, no large volume business is possible.

The United States Vegetable Oil Mission to Brazil has in its official recommendations urged that the United States Government cooperate in every way possible with the Bahia State Government in its effort to encourage the plantation development of palm oil. It has recommended that technicians who are familiar with the methods followed in cultivating the African palm in the Dutch East Indies, the Belgian Congo, etc., be employed and sent to Brazil to cooperate with the Brazilians in their commendable efforts to furnish a new source of palm oil. The Mission has recommended that aid be rendered in securing modern machinery for the processing of such palm fruits as are now available.

An inspection of the oil seed warehouses of the crushers of Bahia gives an oil man a feeling of encouragement. Here will be a stack of two or three hundred tons of palm kernels. Across the aisle will be an equal quantity of bagged copra. Elsewhere will be stacked many tons of ouricuri, babassu and piassava kernels. All of these raw materials go to make high lauric acid oil. True, the quantities



The State Department of Agriculture in its plantation on Itaparica Island is experimenting with two types of oil palms which have been developed in Bahia. In picture Mr. Gordon is holding "head" of fruit from "Sombra" type. Large "head" on ground is from "caboclo" type.

produced are not large, but the feeling of encouragement arises from the fact that it is obvious that not nearly all of the raw material is being harvested. There is much more where it came from and the available supply will be increased if the present profitable prices continue.

It is estimated that Brazil contains 6,000,000 coconut trees. Good stands of them may be seen growing all along the long coast line from the State of Ceara to the State of Rio de Janeiro. Yet only in the State of Bahia did we find the crushers working copra. The fact is that many Brazilians who own coconut trees are just beginning to learn how to make copra. The Vegetable Oil Mission had numerous requests for information on how to make copra from Brazilians who told us that they owned large numbers of trees and had been allowing the nuts to go to waste. We assured them that it would be easy for them to make an excellent quality of sun dried copra and gave them the information they needed to do so. Brazil's production of copra at present will probably not exceed 5,000 tons per annum.

Ouricuri oil is fairly familiar to soap makers in the United States by name. The ouricuri palm is the source of ouricuri wax. The harvesting of

Tours of South America are not always made by plane. The U.S. Vegetable Oil Mission covered much of its ground by combination bus and truck. Occasional river ferries added a touch of excitement to the trip.

the palm leaves to produce wax injures the palm for nut producing purposes. The volume of ouricuri kernel production is not large and it is not apt to be enlarged to any important degree.

The piassava palm, which is the source of the fiber of that name, produces a nut which looks like the babassu except that it has a rough surface. The kernels are rounded at both ends rather than pointed at one end, as are babassu kernels. The oil produced is much the same in chemical composition as babassu oil. The piassava palm is very widely distributed through Bahia and while not extensively exploited at present, may in the future become an important source of high lauric acid containing oil.

Any discussion of the oilseeds resources of Bahia should not exclude the castor bean. It is really the most important oilseed of the State, but has been left until last because castor oil is not an important soap oil. It is crushed in considerable quantities by the oilseeds crushers of Bahia, but it is most important as an export commodity. In 1941 Bahia exported over 65,000 tons of castor beans, 58,000 tons of which went to the United States.

Minas Gerais is the State which chiefly bounds Bahia on the south. Since it juts over under the State of Goiaz it includes within its borders the lower fringe of the great babassu belt which extends down from North Brazil. Minas Gerais may, therefore, in time to come become an important source of babassu kernels as the State has a population of 7,000,000 and labor is not the problem that it is in the north of Brazil. Babassu kernels produced in Minas Gerais have already moved into international commerce, although in small volume, through the port of Rio de Janeiro in recent years. The oilseeds crushers of Rio now crush such babassus as come down from Minas Gerais and from Goiaz by the southern route. The largest of these crushers at Rio de Janeiro is Companhia Carioca. This company, despite its strategic location in respect to the babassu kernel supply above indicated, has lately decided to establish a babassu crushing plant at Sao Luiz, Maranhao, which is proof that the best-posted Brazilian firms believe that Maranhao is the place to go for babassu kernel supplies under present day conditions.

THE most interesting oil resource of Minas Gerais, however, is the macauba palm (*Acrocomia sclerocarpa*). This palm was a complete stranger to the writer, as it is to most every one in the vegetable oil business in the United States. From its fruit there are produced two oils. The pulp, which constitutes 25 per cent of the fruit, yields an oil which closely resembles the palm oil of commerce except that the color is more on the yellow rather than on the red side. Chemically, it seems to be about the same. In the center of the fruit there is a nut, containing a single kernel, considerably larger than the palm kernel of commerce but of a totally different shape. The oil produced from this kernel is practically identical in composition to the palm kernel oil of commerce.

The macauba palm is a large and upstanding tree. It has a thinner bole than the babassu and its leaves are more feathery in appearance and not possessed of the same length as the leaves of the babassu palm. The stalks of fruits look very much the same at a distance as do the stalks of babassu nuts. On closer approach, however, it can be seen that the individual fruits are not nearly so large as the babassu nut. Each is, in fact, about the size of a golf ball, and is covered by a thin yellowish-green shell. On removal of this shell the pulp is exposed. The pulp looks not unlike that of the pulp of the fruit of the African palm. The kernels contain about 55-63 per cent oil.

We visited a mill in Belo Horizonte, the capital of Minas Gerais, which was processing macauba palm fruit to obtain the palm oil from the pulp. This mill was also shelling the kernels and crushing them in an expeller. The mill was rather small and was in the nature of a pilot plant established for the purpose of learning the proper method of processing the macauba palm fruit.

The owner of the mill, Senhor Sebastiao de Andriade Jungueira, had designed a special device for removal of the shell from the fruit pulp, —cylinder which contained knives through which the nuts were passed. The sharp knives removed the thin shell from the fruit and the pulp was discharged from the end of the cylinder. The pulp was then put through the expeller and the palm oil was pressed out.

Soap makers whose plants we visited in Belo Horizonte and Rio de Janeiro advised us that they considered the oil from the macauba palm to be substantially the same as the palm oil of commerce except that they found the free fatty acid content of the oil unduly high. I believe, however, that this was due to the fact that faulty technique was employed in obtaining the oil. Apparently, the pulp of the macauba palm fruit contains enzymes just as does the pulp of the African palm. If the fruit is not processed quickly after being gathered, the enzymes bring about a rapid increase of free fatty acids. Obviously, the fruit should be processed immediately after being gathered. By this procedure the increase of fatty acids is held in check.

The nuts containing the kernels are cracked in a small mill. Separation of the kernels from the fragments of the shell is accomplished by means of the salt water flotation method. There are, of course, more modern methods by which this work could be accomplished. The shell of the macauba palm nut is no thicker than the shell of the nut obtained from the African palm.

It is estimated that there are about 30,000,000 macauba palm trees in the State of Minas Gerais. Each tree produces approximately 100 pounds of fruit per annum. Only a small percentage of this fruit is collected, the great bulk of it being eaten by hogs, cattle, etc. It is probable that the macauba palm stands extend on over into the neighboring State of Goiaz, possibly even into Mato Grosso.

If the matter of finding a substitute for palm oil becomes of sufficient importance, it would seem that

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The TEA-TREE OILS

By Dr. Ernest S. Guenther

Fritzsche Brothers, Inc.

THE rather vague term "tea trees" comprises a number of species of the genera *Melaleuca, Leptospermum, Kunzea, Baeckea,* etc. (fam. *Myrtaceae*), all very probably natives of Australia and the adjacent Malayan island world. Baker and Smith classify the *Melaleuca* in general as "tea trees" but Penfold and Morrison[1] include in this designation also certain species of *Leptospermum*. The *Melaleuca* form an interesting group because of the great medicinal and pharmaceutical value of their essential oils, while the oils of certain *Leptospermum* species, *L. citratum,* for example, are valuable as sources of citral and citronellal. The vernacular name "tea tree" must be attributed to Captain Cook's mariners who used the leaves of a *Leptospermum* species as a substitute for tea.

Of the oils distilled from *Melaleuca* species, cajuput oil is the most important, with niaouli oil next, followed by *Alternifolia* (the commercial tea tree oil) which is finding ever wider recognition.

Oil of Cajuput

Oil of cajuput is distilled from the fresh lancet-formed leaves and terminal branchlets of a few varieties of *Melaleuca leucadendron* L. (fam. *Myrtaceae*), called in Malayan *gelam* or *kajoe gelang*. There also exists a variety, growing mostly in marshy regions, which yields an oil of different chemical composition. Since this latter variety contains little or no cineol, its oil has no commercial interest.

The main producing regions of cajuput oil have been on the outlying islands of the Dutch East Indies Archipelago, especially the island of Boeroe and the adjacent island of Ceram (Moluccas). The wild-growing tree has not spread as far as Java. Experiments have been undertaken to cultivate it in Wonosobo (Java) with the idea of reclaiming otherwise useless land and, at the same time, producing an extra fine quality of oil by modern methods of distillation. These plantings are still in the experimental stage. Previous attempts to raise the trees in Java on very poor soil failed. The oils distilled from those trees had entirely different properties, and it is possible that a wrong variety of planting material was used. Trees grown experimentally on Sumatra yielded too little oil to make commercial exploitation worth while.

The cajuput tree reaches a height of up to 45 feet. Extremely vigorous and tough, it crowds out other plants and cannot be exterminated by cutting or burning. In the form of forests, the tree covers wide areas of low coastal plains and mountains. On Boeroe and Ceram it is never cultivated because an enormous quantity of leaf material from wild-growing trees is available. The cajuput forests of Boeroe are frequently ravaged by fires but new growth soon makes up for the loss.

The leaves are harvested throughout the year. They are cut from shrubs and low trees which are usually not more than six months old; collecting distillation material from older and taller trees would be too difficult.

Production of the oil is entirely in native hands. A complicated system of arrangements (including money advances) between native cutters, Chinese and Arabian distillers, and middlemen has so far prevented improvement of the industry. Furthermore, Boeroe is still a rather wild and unhealthy island. There are few and irregular steamers and no cable connections with Java. Therefore, the whole cajuput oil industry has been conducted on an utterly primitive basis. It was only in 1938 that a white operator, holding large forest concessions, started to produce cajuput oil on a more advanced basis and succeeded in exporting oil lots of highest quality. Under normal conditions the outcome of this venture would have depended upon the willingness of foreign buyers to pay a premium for pure, select oils. The latest political developments, however, jeopardize the effort. After all, it must not be forgotten that European and American buyers represent only a minority, and that the bulk of oil of cajuput is consumed in the Dutch East Indies (especially Java), in British Malaya, India and South China, where the oil forms one of the most popular general household medicines. The poor natives there pay no heed to physical and chemical properties as long as the oil has a strong, pungent odor and is cheap enough for their means.

Thus, the distillation of cajuput oil has remained a very primitive native industry. Lack of roads and shortage of hired labor hinder the transport of plant material over any appreciable distance. No modern plant could compete with the simple migratory stills which the natives carry into the woods. After the trees of one section have been exploited, the stills are carried on bamboo poles to a new site. The distillers

erect a palm leaf shed as shelter and living quarters for themselves.

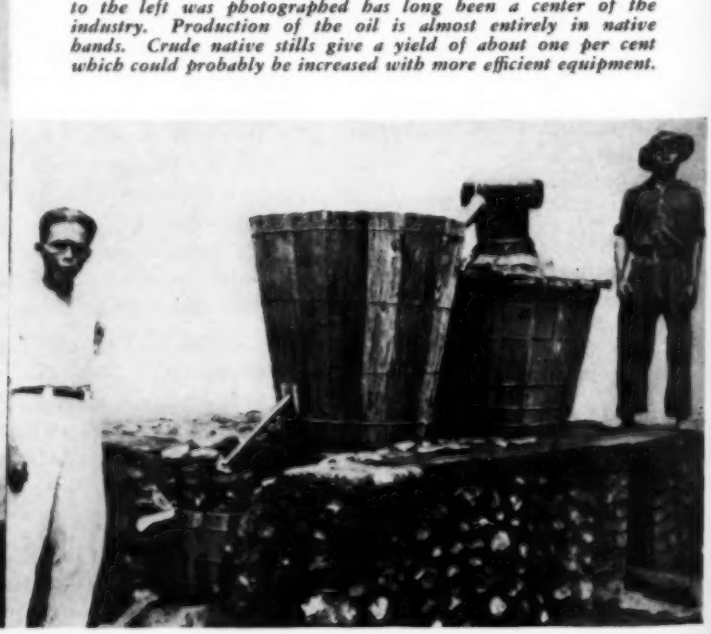
There are about 600 small distillation posts on Boeroe. The stills, usually three and one-half feet high, are made of cast iron or copper and heated by direct fire. The head (helm) of the still as well as the simple condenser, immersed in a barrel, are often constructed of copper. That is one reason for the greenish-blue color of the crude oil. The fresh leaf material is distilled after being tramped into the kettle (still), which is half-filled with water. The yield of oil is about one per cent but could probably be increased in modern stills equipped with efficient condensers. Depending upon the cooling effect of its condenser, a native still can produce up to six liters of oil in 24 hours. The oil is collected in simple wine or beer bottles of 0.6 to 1.5 liters capacity. When shipping the oil abroad, from 15 to 25 such bottles are wrapped in spent cajuput leaves and packed in cases made of nipa palm stalks. Since no large bulking tanks are available in Boeroe, the shipments usually consist of small oil lots distilled at different periods of the year and in different sections. Thus, the lots reaching the market differ considerably in regard to physical and chemical constants. This perpetual variation in the properties of even genuine cajuput oils has led to much confusion in regard to limits of the constants.

Recently cajuput oil has been exported also in galvanized iron drums which caused another variation in quality, i.e., different color.

Properties of Cajuput Oil

THE color of cajuput oil and its variation during recent years has caused much controversy. Formerly, oil of cajuput was known usually to possess a green color, and for many years some buyers abroad insisted upon this tint, associating it with purity. The controversy as to whether this green color is caused by the presence of chlorophyll or traces of copper has never been settled. Examining genuine lots of imported cajuput oil, we found heavy metals; yet, the green color of some of them was due not to copper but to organic compounds, perhaps chlorophyll, mechanically carried over in the primitive stills. In former days the stills used in Boeroe either consisted of copper or at least had copper helms (still heads) and copper condensers. Since the crude oil contains small quantities of aliphatic acids, the copper is kept in solution and, when the oils are exported in glass bottles, as in former years, they arrive in Europe and the United States in their original greenish-blue color. The green color of essential oils, if caused by the presence of copper, can be removed by treatment with concentrated solutions of tartaric acid. If, on the other hand, the green color is due to the presence of chlorophyll or other organic coloring matter, it can be decolorized by treatment with a small quantity of active carbon. Of course, rectification of the oils, too, eliminates the color, whether it is due to the presence of copper, chlorophyll or other factors. However, rectification of cajuput oil is not carried out in the producing regions of Java or Singapore; the oil is invariably exported in crude form.

For a number of years oil of cajuput has been imported in galvanized iron drums, with the result that upon arrival it has lost its green tint. It is a fact that cajuput oil, when stored in galvanized iron drums for two or three months, loses its original green color and turns yellow. An investigation made by the Government



The tree from which cajuput oil is derived is native to the Dutch East Indies. The island of Boero where the specimen to the left was photographed has long been a center of the industry. Production of the oil is almost entirely in native hands. Crude native stills give a yield of about one per cent which could probably be increased with more efficient equipment.

Control Laboratory of Buitenzorg, Java, showed that this change of color is caused by an exchange of copper for zinc from the galvanized walls of the drums and that otherwise the intrinsic properties of the oil are uninjured.

Thus, a lot of cajuput oil of light yellow color had either been distilled in iron stills and, therefore, had no contact with copper, or else the originally green oil had been in galvanized iron drums for a certain length of time. In order to comply with demands of those buyers who insist upon the greenish tint, exporters in Java sometimes restore the original green color simply by suspending small copper sheets in the oil for several days.

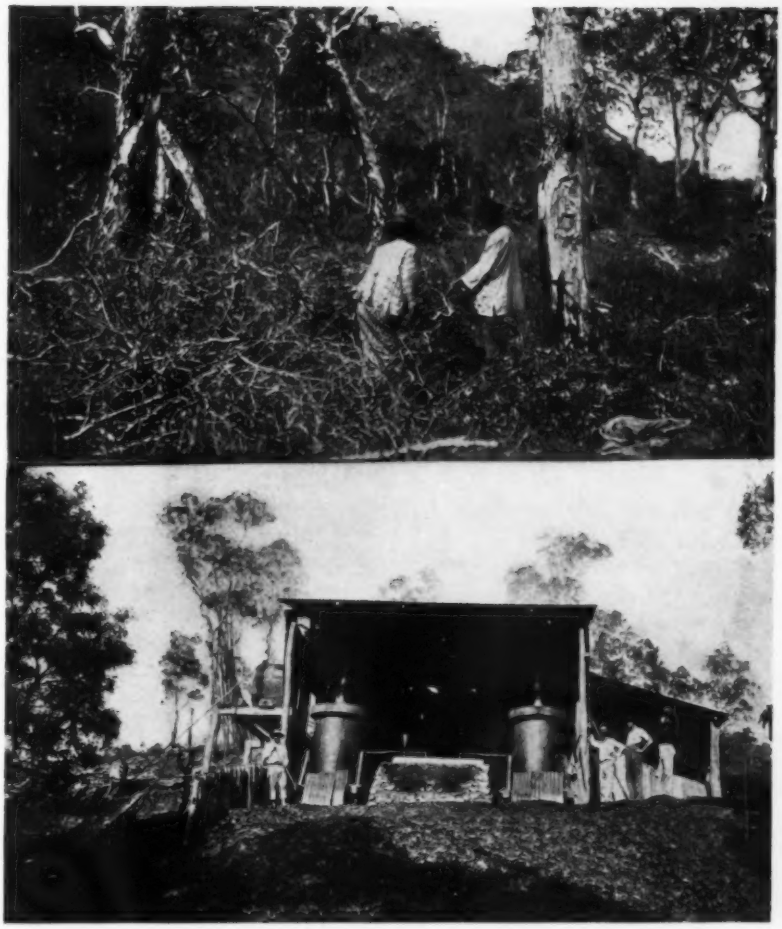
Physical and Chemical Constants

IN the course of years, the pharmacopoeias, upon representation by the Trade Museum Division of the Hollandish government, modified their requirements in regard to the constants of cajuput oil, which had been too narrow in some of the older editions. The British Pharmacopoeia of 1932 specified 50 to 60 per cent cineol for rectified oils, but the 1936 Addendum changed the standard to from 50 to 65 per cent by weight. Because of the early erroneous specifications, many a lot of genuine cajuput oil was rejected while inferior oils were accepted. The Eleventh Revision of the United States Pharmacopoeia eliminated oils of cajuput altogether, much to the regret of exporters in the Dutch East Indies who attribute to this fact the drop in exports of cajuput oil to the United States during the last few years before this war.

Two samples of crude cajuput oil collected by the writer during his stay in the East Indian Archipelago showed the following constants:

	a	*b*
Specific Gravity at 15°C.	0.919	0.922
Optical Rotation	—1°36'	—0°54'
Refractive Index at 20°C.	1.4703	1.4670
Saponification Value	9.3	6.5
Cineol Content	53.8%	64.0%
Solubility in 80% Alcohol at 25°C.	Soluble in 1.0 volume and more	Soluble in 1.0 volume and more

Sample "b" was of exceptionally fine quality.



Javanese laborers, women as well as men, cut the branches and remove the leaves for use in production of niaouli oil in New Caledonia. Native distilleries for niaouli oil are commonly located as close as possible to the raw material source.

Cajuput oils, native and rectified, inspected by the author during the last few years varied between the following limits:

Specific Gravity at 15°C.	0.916 to 0.926
Optical Rotation	—1° to —4°
Refractive Index at 20°C.	1.4640 to 1.4720
Saponification Value	6.5 to 12.0
Cineol Content (o-cresol method)	50 to 65%
Solubility	Soluble in 1.0 volume and more of 80% alcohol.

The oils must not contain fatty oils, the presence of which is indicated by poor solubility and a high saponification value. The oils usually contain heavy metals (copper) and often coloring matter (perhaps chlorophyll).

We determine the content of cineol according to Cocking's o-cresol method which is officially employed in the British Pharmacopoeia. Reclair and Spoelstra[2] experimented with the determination of cineol in cajuput oil according to Cocking's method and found it reliable, provided the oil does not contain more than 12.5 per cent of terpineol. If more terpineol is present, the results must be corrected.

Adulteration

OIL of cajuput is sometimes adulterated by the native producers and intermediaries with fatty oils or with kerosene. The odor of this oil is so strong that a moderate addition of kerosene is hardly noticeable. A simple test for adulteration employed by the native dealers in the East Indies consists of shaking the bottle violently. If the air bubbles rising to the surface do not disappear quickly, and if there is a formation of foam, the oil has very likely been cut with fatty oils or kero-

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BUBBLE BATH PRODUCTS

By Dr. C. A. Tyler

IN the light of war-time conditions, nothing could perhaps appear more incongrous than the luxury which is implied in a bubble bath. Anything smacking of luxury is in fact taboo, that is as far as current marketing a new product is concerned. New cosmetics are banned by the W.P.B. for the present at least, and any discussion of bubble baths, their composition, character and use, must of necessity be of a purely academic nature. Nevertheless, the part which a product of this type can play, —as has been contended by manufacturers for most cosmetics on the market,—is not negligible in the case of women and girl workers in plant and office. Many are now putting in long hours and the effect of a periodic bubble bath as a relaxation and an aid in building morale can be quite beneficial. In addition, many women workers who heretofore could not afford to buy bubble bath products, now are earning sufficient money in war work to afford this luxury.

A warm bath has always had an appeal, enhanced for feminine users by the addition of a pervasive pleasant odor with the aid of bath salts, and in recent years by the addition of soothing contact with soft fine bubbles of foam, — the commercially successful bubble or foam bath. Perhaps the idea was evolved from the acceptability of bath salts, which can be made not only pleasant due to their fragrance, but utilitarian by the incorporation of water-softeners to save soap and prevent the formation of hard-water scum.

Various forms of bubble-bath preparations have been sold,—some being simple mixtures of salts so chosen as to evolve carbon dioxide by reaction in solution, some containing added salts of a water-softening character, some containing soap to give a general cleansing product in addition to bubble production, and some containing mixtures of foam producers and synthetic detergents. With such variation in the type of ingredients used, it is natural that the products on the market differ widely in price according to their contents. It perhaps seems logical to place these products somewhere in the class of luxury cosmetics, and in the case of some types, cost is not necessarily a primary consideration. This permits the manufacturer who aims at the luxury trade to combine various detergents, emulsifiers and foam stabilizers with foam-producing compounds. The compatibility of the ingredients must, however, be considered, especially when soap is present in the preparation or is used in conjunction with the bubble bath.

Although sold in liquid, powder and tablet form, the latter probably is the most acceptable. A person confronted with a liquid or a powder is never sure just how much to use unless given specific directions, while the tablet simplifies this problem. Also powders sometimes lose their homogeneity unless the particles of the different ingredients are of about the same specific gravity. If solid, the materials should dissolve very rapidly in warm water. A tablet needs to be compact enough to handle but at the same time lightly enough pressed so that it will distintegrate quickly and so permit rapid solution.

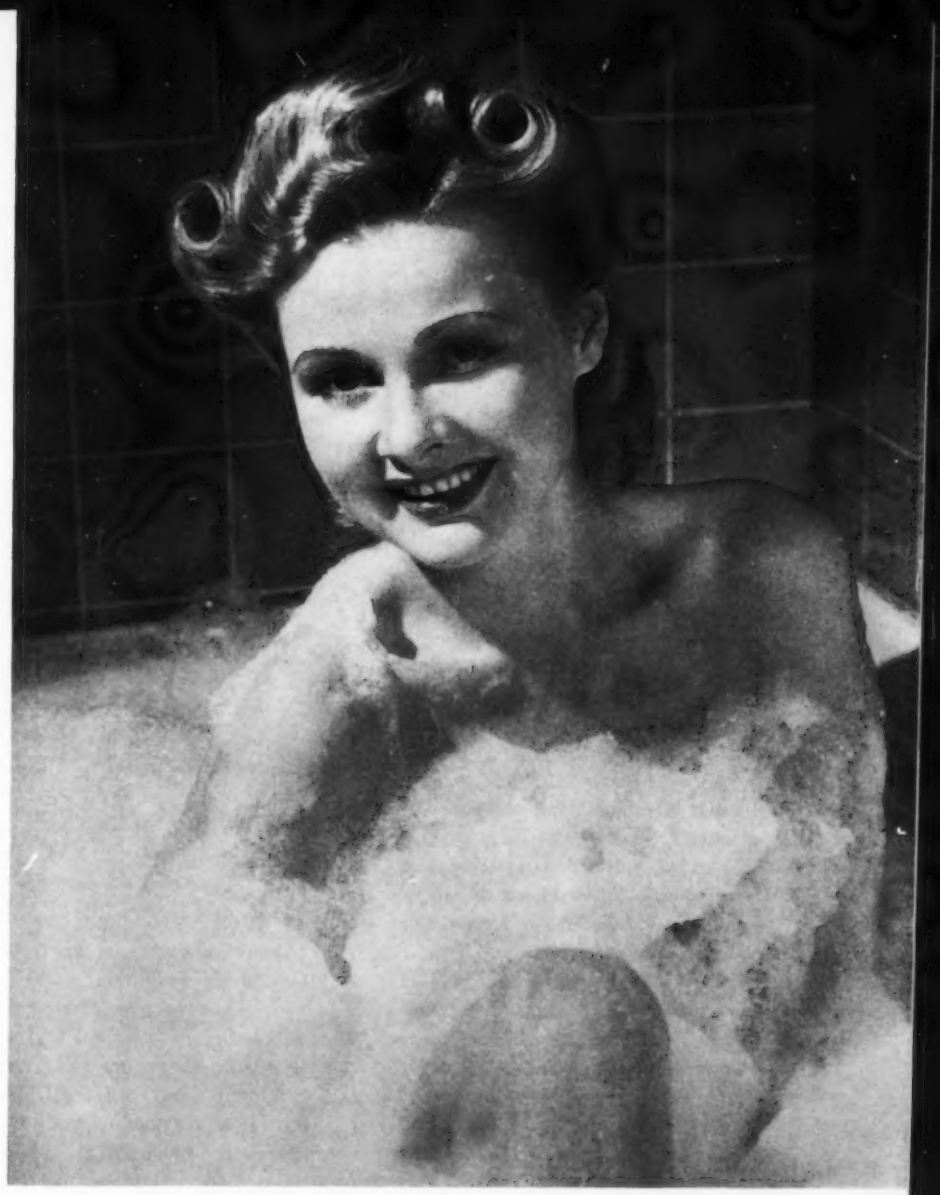
The early products were largely salt mixtures containing an acidic ingredient and a basic carbonate to produce carbon dioxide by reaction. Organic acids such as tartaric or citric acids were used because of their mildly acidic nature, as in the following formula:

Tartaric acid	10-20%
Sodium bicarbonate	20-50%
Inert filler	68-27%
Pine-needle or other oil	2- 3%

Both tartaric and citric acids, although weak acids and relatively inexpensive, have the disadvantage of being somewhat hygroscopic. In a product of this type it is of the utmost importance that the materials be kept dry. Any moisture taken up will partially dissolve them and permit reaction with consequent deterioration and failure of the product in use. For this reason the mixing of the ingredients must take place in a dry atmosphere, and the products stored in a dry condition, both before and after mixing. Sometimes the acid and bicarbonate are put up in separate packets to be mixed at the time of use, enough in each of the two kinds of packets to serve for one bath.

Adipic acid has been recommended in place of tartaric or citric acids, since the former is nonhygroscopic and the powder can be put up in one package with less danger of deterioration. Whether premixed or mixed in use, the acid and bicarbonate react as soon as dissolved in water to form carbon dioxide, which bubbles up through the water. If in tablet form, exposure of the tablets to the atmosphere for a few hours before packaging permits a slight reaction on the surface, which helps hold the tablet together.

The inert fillers referred to in the above formula include common salt, magnesium sulfate, sodium sul-



Ewing Galloway Photo.

fate and similar inexpensive salts. Sometimes 1-2 per cent of dextrins are added to promote solubility and help stabilize the foam. Soap is not compatible with such a mixture, particularly if magnesium sulfate is present, as this would precipitate insoluble magnesium soap. Although magnesium sulfate has been used, on general principles it would seem best to omit it. The acid ingredient would have a harmful action on soap, causing it to lose its effectiveness as soap, and precipitating fatty acids. However, in most of these products, sodium bicarbonate is added in excess of the acid ingredient, so that if soap were used after the bubble preparation, the organic acid would already have reacted. Except where soft water is supplied, if soap were used following bubble production, formation of lime soap would tend to break up the bubbles. When sodium carbonate is present, as in sodium sesquicarbonate referred to later, the carbonate has some water-softening action.

Pine-needle or other essential oils have to be kept to fairly low proportions so that they will not separate as droplets from the finished product. Because limited in amount, the quality must be good with a relatively high ester content, for example of bornyl acetate in pine-needle oil. Lavender, Cologne-water and other perfumes may be used. The essential oil can be dissolved in alcohol and sprayed over the powdered mixture with stirring, care being taken to avoid as far as possible loss of odor value. Prepared odors especially for foam bath products are sold by most of the perfuming materials houses and are probably safest to use. Fluorescein has been used as a coloring agent, as well as certified food dyes. The dye is dissolved in water and mixed with an aqueous solution of part of the bicarbonate. This is evaporated to dryness at a low temperature to avoid decomposition of the bicarbonate, the temperature not being allowed to go above 105° F. The colored powder is then mixed with the other dry ingredients.

The foaming efficiency of the above sort of mixture is rather low, so is sometimes increased by the incorporation of a strong foam-producing agent such as saponin, an effective foamer in either acid or alkaline solution, and not affected by lime. Such a mixture, protected by British, French and German Patents, contains 1800 grams of crystalline aluminum sulfate, 1600 grams of sodium bicarbonate, and 12 grams of saponin, to be used with 25 liters of water. The acid ingredient here is aluminum sulfate, a salt which hydrolyzes in solution to give an acid reaction. Reaction of the two salts in solution produces insoluble aluminum hydroxide and the gas, carbon dioxide. The low proportion of saponin shows what a powerful foaming agent it is. It is sometimes used in beverages, one part in a hundred-thousand producing a suitable foam there.

Soap-containing Mixtures

SOAP itself can be used to make a bubble bath if of the proper physical and chemical nature. Preferably it should be in the form of a

fine powder for ease of solution. Chemically it should be high in coconut oil or other high-lathering oil, a suitable composition being the following:[1]

	Per Cent
Coconut oil	50
Palm oil	30
Stearin	20

This is saponified with a mixture of 15 parts of 40°Be. caustic potash and 85 parts of 38°Be. caustic soda. After saponification 2 per cent excess stearin is added.

In the presence of soap it is especially important to have a water softener, sodium metaphosphate or pyrophosphate being highly satisfactory, usually in a proportion of 2 to 5 per cent. Substances which are compatible with soap and have a stabilizing action on the lather include any number of emulsifying and wetting agents of the types of salts of sulfonated or sulfated fatty acids, of fatty alcohols, of petroleum products, —superfatting agents, and protective colloids, such as 1 to 5 per cent of lecithin, 1 to 5 per cent of sodium alkyl sulfate, 5 per cent of Lamepone, 0.5 to 2 per cent of gelatin, 5 per cent of soluble starch, 1 per cent of sodium cholate, 5 per cent of bentonite, or a few per cent of methyl cellulose. Two or more of these may be combined if desired. One hundred or more grams of soap-powder mixture are needed to give a full bubble bath. With a 25 per cent liquid soap, such as that of oleic acid, containing suitable additives, at least 250 grams are needed. Saponin can be added to soap to increase foaming, a small proportion being about as effective as a large proportion. On the whole, soap-base bubble baths have not been too successful.

Synthetic Detergent Products

APPLICATION of modern wetting and foaming agents have had a good deal to do with the growing success of the bubble bath. With the omission of soap, hard-water and acid solutions no longer interfere with detergent action and foaming power. Sodium bicarbonate and an acid ingredient may be incorporated with these synthetic materials to add to the foam production. One type of organic compound on which these blends are based is that of the sapamines, salts of diethyl amino ethyl oleyl amide and diethyl amino ethyl stearyl or lauryl amide. These fatty-acid condensation products are not compatible with strongly alkaline salts, as sapamine base is liberated and its usefulness destroyed above about pH 7.6.

Among the modern commercial products is one which depends for its detergent action on another of the synthetics, the sodium salt of an alkyl benzene sulfonate in which the alkyl radical contains about 12 carbon atoms. As sold, the detergent carries about 60 per cent of sodium sulfate. The bubble-bath preparation contains about 20 per cent of the detergent product and 80 per cent of modified soda or sodium sesquicarbonate, $NaHCO_3$,Na_2CO_3,$2H_2O$. The powdered material is pressed into tablet form.

Other products are based on the fatty alcohol sulfates for detergent and foaming action, often with other foaming agents added. The fatty alcohol sulfates being indifferent to the effect of pH and hard water, can be combined with either acid or alkaline ingredients. Examples of suitable formulas are the following:

(I)

	Parts by weight
Sodium lauryl sulfate	400
Soluble starch	50
Sodium cholate	20
Sodium bicarbonate	260
Tartaric acid	180
Adipic acid	50
Pine-needle oil	20
Fluorescein	0.1

(II)

	Parts by weight
Sodium lauryl sulfate	130
Sodium bicarbonate	450
Tartaric acid	350
Sodium cholate	10
Soluble starch	50
Pine-needle oil	10

In the first formula, the sodium lauryl sulfate is the effective detergent, starch and sodium cholate being foam stabilizers, and bicarbonate plus organic acid, a carbon dioxide producer. It would seem more logical to use all tartaric or all adipic acid as the acid ingredient, since a proportion of adipic acid will not change the hygroscopicity of the tartaric acid present. About 50 grams of this (I) should give a sufficient volume of foam for a full bath, while 200 grams would probably be required of the second (II) product.

A great deal is heard about how good milk is for us, and that we should drink more of it than most of us do. Related to this, no doubt, is the idea of taking a milk bath, which possibly sounds as though it should make one healthy or improve one's skin. In any case, milk baths of the foaming type have been offered, milk itself having some tendency to foam and to sustain foam, thus being a foam promoter. These preparations are preferably cleansing agents as well, as in the following:

(III)

	Parts by weight
Sodium lauryl sulfate	375
Milk powder	375
Sodium bicarbonate	84
Tartaric acid	80

(IV)

	Parts by weight
Sodium lauryl sulfate	500
Sodium sesquicarbonate	370
Milk powder	100
Pine-needle oil	30

A liquid preparation may contain:

	Parts by weight
Triethanolamine lauryl sulfate	930
Triethanolamine cholate	20
Pine-needle oil	50

Such a liquid is rather thick and can be diluted with an equal amount of water or of sulfonated castor oil. About a hundred grams are needed for one bath. Suitable additions to liquid preparations include small proportions of water-soluble gums, sodium alginate, and other glue-like substances to toughen the bubbles and stabilize the foam.

Directions for Use

PERHAPS the best method of getting the most foam out of these preparations is for the user to run hot water into the tub to warm it up, then let most of it run out again. The correct amount of bubble-bath product is then added to the small amount of

(*Turn to Page 65*)

[1] J. Augustin. *Seifensieder-Ztg.* 66, 315-6, 335-6 (1939).

Roll Back Fat Prices To Relieve Soap Makers

PRICES for inedible tallow and greases were rolled back one-cent per pound by the OPA on July 19 as a step in relieving the squeeze on soap manufacturers resulting from high raw material costs and low ceiling prices for soap products and about which numerous protests had been received from the soap industry. At the same time, revision of the fat and oil price structure was made by the OPA in four steps to readjust the marketing of imported vegetable oils, tallows, greases and marine animal oils and to adjust government contracts.

The four steps covered in the OPA order were (1) fixing of specific maximum prices on 19 different imported vegetable oils; (2) adjustment of price differences between various grades of tallow and greases and the roll back of the new prices on inedible tallow and greases about one cent a pound to relieve the raw material squeeze on soap manufacturers who previously had voluntarily cut their soap prices. (3) setting of "dollars and cents" maximum prices on six different marine animal oils and one processed marine animal oil. (4) adjusting of maximum price schedule to cover contracts with the government or its agencies. Sellers can make deliveries while adjustments are being made. Final settlement must be made on each such transaction in accordance with OPA orders on each such application.

These changes, made in Amendment No. 6 to revised price schedule No. 53 (fats and oils), were effective July 25, except the tallow provisions, which became effective on August 1. Maximum prices for the sale of nine of the imported vegetable oils are set at the highest representative prices at which each of these oils sold under revised price schedule No. 53, according to figures collected by the OPA. Therefore, these ceiling prices represent the highest representative actual "dollars and cents" prices which most sellers of these oils computed their ceiling prices to be under the freeze technique employed in the schedule. Vegetable oils with ceilings figured on this basis include: coconut oil, castor oil, muru-muru oil, palm oil, perilla oil, commercial oiticica oil, teaseed oil, tung oil, and ucuhuba crude vegetable tallow. Condensed oiticica oil price ceiling is established on the basis of its normal differential under commercial oiticica oil. Price ceilings on babassu, pataua and tacum oils were set on a basis of 111 per cent of sales prices made during a period prior to November 26, 1941.

On rapeseed oil, important to marine engines, and now imported from Argentine, the maximum price set is 11.50c per pound in bulk, C.I.F., New York. The figure is based on higher procurement cost. Cohune, ouricuri, andiroba, palm kernel, sunflower and sesame oils had price ceilings established over them. They were based on maximum prices for comparable oils both as to quality and interchangeability.

Since edible tallow competes with other edible oils rather than inedible tallow, the price was kept in line with edible oil prices and not rolled back. Inedible tallow and greases had ceilings re-established that were figured on the base price dates of October 1, 1941, or 111 per cent of November 26, 1941 levels. These did not always reflect normal grade differentials. Adjustment was made to restore normal grade differentials of inedible tallows and greases and a roll-back of one cent a pound was made on these fats. The ceiling on inedible tallow will now be 8⅝ cents a pound for Prime Packers grade, basis Chicago. In order to prevent misunderstanding, specifications of titre, free fatty acid, m.i.u. and f.a.c. are set for each grade of tallow and grease. These specifications are in accordance with established trade differentials. F.O.B. prices are established for tallow and grease. Since this has not been the case in the past, proper adjustment has been made for this factor in setting these prices.

Reaction of soap makers to the roll-back in the price of inedible tallow and greases was mixed. One large western manufacturer felt that the roll-back would "approximately take care of the rollback on soap prices" which soap makers granted recently. He did think the move " . . . will not cover the tremendous inventory loss . . . " suffered, since " . . . the great majority of soap manufacturers were carrying unusually heavy stocks of inedible animal fats." "When our soap prices were rolled back, we were forced to protect jobbers and chain store stocks, rebating them for the decline in any merchandise they had purchased at a higher level than the January prices. Consequently, as a whole the soap industry is still in none too good a position from a standpoint of making profit." Besides this " . . . volume is definitely off, which causes the fixed overhead to advance sharply. The speculative interest has been taken away from the jobber and retailer because of ceiling prices. We are still evaporating crude glycerine at a ceiling price which is less than our actual cost." This manufacturer expressed the opinion that if the price of crude glycerine were advanced one cent a pound it might alleviate the tightness of the financial condition of the industry.

A rather large eastern soap maker expressed the belief that the OPA was very cooperative in lowering the price of tallow as much as it did. He thought that while the roll-back was beneficial to the industry as a whole, there would still be a few lines in "trouble." "But taking the soap industry as a whole, I think this drop in the price of tallow will adjust matters in a very satisfactory manner," he said.

It was his view that cutting down expenses would enable many manufacturers to keep their financial health good. " . . . gasoline rationing, lack of manpower and other things will

(Turn to Page 67)

New Products

. . .

Shower Bar Pine Soap, designed with a grip for shower bathers, has just been brought out by Hewitt Soap Co., Dayton, O. Four cakes of Pine, Sandalwood or Bouquet fragrances come boxed to retail for one dollar.

Johnson & Johnson, New Brunswick, N. J., have just added this new baby gift box to their line of infant gift sets. Baby powder, cream, soap and oil come packed in lacquered box for 89c.

Ruf-Cut, a new soap especially for men, is now being shown by Lightfoot Schultz, New York. Four 10-ounce cakes in a gold encrusted box retail for $2. Eau de Cologne (tan) and Woodland Pine (green) are the two styles available.

and Packages

A sled of soap, complete with rope pull-cord (for shower use) and decalcomania design, is one of Lightfoot Schultz' latest offerings. The old fashioned Rosebud soap sled weighs nearly ½ lb. Retails for 59c.

Something new at Theon, Inc., New York, is Scent O Foam liquid concentrate bubble bath glamourously packed in a glass dispenser. There are four odors. The retail price is $1.25.

New Christmas gift packaging for Roger & Gallet, New York, trade marked Blue Carnation soap is this unusual triangular box. The other package consists of two cakes of Blue Carnation Soap and a bottle of cologne.

NEWS

P & G Denies Conspiracy

Three Procter & Gamble soap companies and eight individuals pleaded innocent in Boston Federal Court, July 20, to indictments charging use of the mails to defraud and conspiracy to steal trade secrets from Lever Brothers Company of Cambridge. Procter & Gamble Company, the Procter & Gamble Distributing Company and the Procter & Gamble Manufacturing Company have all been indicted. D. Paul Smelser and Cleo W. Knappenberger, identified as executives of the Procter & Gamble Company, were two of the individuals entering pleas of not guilty. Assistant U. S. District Attorney Joseph M. Hargedon is reported to have told Judge Francis J. W. Ford that another defendant, Raymond J. Lamping of Detroit, was fighting against removal to this jurisdiction.

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Settle "Carnation" Trade Mark

A dispute over the trade mark "Blue Carnation" has just been settled by a friendly agreement between Mem, Inc., and Roger & Gallet, New York perfumers. Recently Mem, Inc., introduced a line of "Blue Carnation" soap. It was later discovered that Roger & Gallet had purchased the trade mark "Blue Carnation" following the introduction of the original line in 1938. Under terms of the agreement released in a letter on July 21, by G. Rocherolle, president of Roger & Gallet, Mem, Inc., agrees to: . . . stop manufacturing a blue soap in connection with the word "carnation"; not to use the word "blue" with "carnation"; eliminate the word "blue" on "Blue Carnation" boxes and sell out the stock as quickly as possible; deliver the cut used for printing the boxes and catalogs listing "Blue Carnation" to Roger & Gallet. Unless a final court decision holds that Roger & Gallet have no trade mark rights to the word "blue" or the color "blue" in connection with the word carnation, Mem has the right to use that notation after such a decision. The trade mark "Blue Carnation," originally the property of Perfumerie St. Denis, was bought by Roger & Gallet on September 25, 1939 and reregistered by them on April 8, 1941, according to Mr. Rocherolle.

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Shulton Announces Awards

Shulton, Inc., soap manufacturers, New York, recently awarded $6,550 in war bonds and stamps to winners of their two recent Father's Day contests. A total of $3,000 in war bonds and stamps was awarded consumers in the patriotic jingle contest, while $3,550 in war bonds and stamps was given to stores—as prizes for window displays.

Soap Labor Costs Up

Average weekly earnings in the soap industry were reported as $35.51 for May, 1942, by the U. S. Dept. of Labor. This represents an increase of 33c over the April figure and 52c above that of March. Average hours worked per week were reported as 41.0 for May, 1942. a slight increase over the 40.9 average worked in April. May's figure was still below that of March, 1942, which stood at 41.1. Average hourly earnings rose to 86.7 as against 86.1 in April and the March average of 85.2.

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Phillips on Transport Committee

Roy B. Phillips, director of traffic for Procter & Gamble Co., Cincinnati, has been appointed a member of the newly formed Vegetable Oil and Packing House Products Transportation Advisory Committee.

These five soap sculptures won $25 honorable mention awards in the recently concluded 18th Annual National Soap Sculpture Competition sponsored by Procter & Gamble Co. Left to right are: pair of horses, Madonna and child, Bali dancer, panther and double-crossed Christ.

P & G Advances Brodie, Knowles

Procter & Gamble Co., Cincinnati, has elected Renton K. Brodie vice-president to fill the vacancy caused by the death of Herbert G. French; and Harvey C. Knowles has been made a director of the company and vice-president in charge of manufacturing, succeeding Mr. Brodie in the latter capacity.

R. K. BRODIE

H. C. KNOWLES

Mr. Brodie joined the company in 1919 as a research chemist in 1931 he was elected vice-president in charge of manufacturing, and in 1934 he was made a director.

Mr. Knowles, who has been general manufacturing manager since 1939, has been with the company for 21 years. Closely associated with the technical end of the business, he was largely responsible for the design and construction of eleven plants the company put into operation in this country and abroad in the last decade. He also has been active in the Procter & Gamble Defense Corporation.

WPB Limits New Cosmetics

Soaps, other than shampoos and shaving soaps, were specifically omitted from WPB order L-171, issued July 17, curtailing the production and packaging of cosmetics and toiletries. Shaving cream, soap or liquid; soap shampoo; tooth cleanser, liquid, paste or powder containing no coconut oil, alcohol, added glycerine or wetting agents were placed on the unrestricted list, number one. On the second list are items containing some critical material. It permits the manufacture of 100 per cent of the 1941 quantity, but only 90 per cent of the 1941 marketable units. It is hoped that by this ruling fewer containers will be used and that larger ones will supplant smaller units.

Shaving cream, soap or liquid (containing coconut oil, alcohol or added glycerine); tooth cleansers (containing alcohol, glycerine, coconut oil derivatives, or wetting agents); hair rinse, etc., are mentioned on list two. The third list allows only 80 per cent of the 1941 quantity and 72 per cent of the 1941 marketable units to be manufactured. Bubble bath, tooth whitener, hair lotion (alcoholic) and any other toiletry or cosmetic articles not mentioned in lists one and two are placed on the third list.

The sale and manufacture of new products, those not produced commercially or offered for sale during the past twelve months, were prohibited, except upon special permission of the WPB. The WPB estimated that 17,400,000 pounds of vitally needed chemicals and critical war materials would be saved by these restrictions. The 1942 production of most of the cosmetics covered in the order was estimated at 15 to 25 per cent ahead of last year's output. The 1941 factory sales were reported at $200,000,000 by 3200 companies. Perfume is the only toiletry that is permitted to be sold in more than three consumer sizes, four being permitted. The number of container sizes for professional or service users is also restricted.

Lever Bros. Repay Debentures

It has just been reported from London that Lever Brothers and Unilever Ltd. are repaying the whole of their outstanding 5 per cent debenture stock, of which over 2,750,000 pounds is in existence. The stock will be redeemed October 1. The prospectus states that since April of this year the debentures were redeemable at par any time on three months notice. Recently the stock changed hands at 102 including interest from April 1. Formal notices of redemption have been sent to stockholders.

Wrisley Employees Golf

The ninth annual men's golf tournament of Allen B. Wrisley & Co., employees was held June 20th at Woodridge Country Club, near Chicago. Wrisley B. Oleson, company president, won the trophy for low gross and the cup for low net went to S. J. Woodruff, personnel director. Numerous other prizes contributed by the company and by Mr. Oleson and George A. Wrisley, vice president, were distributed at dinner. Mr. Wrisley, who is giving full time to War Production Board activities, came out from Washington for the event. Women employees of the company attempted a rival tournament at Evergreen Park, July 11th, but called it a day after reaching the 9th hole. Who won the low gross and why is being kept a dark secret, according to Mr. Woodruff, but a trophy for low net was awarded to Lois Rea of the private brands department. Other prizes contributed by the company, were awarded at the picnic dinner.

Beirne Leaves WPB

Thomas J. Beirne resigned last month as chief of the can section of the containers branch of the WPB. He rejoins National Can Company and is making his headquarters in Chicago.

Controllers Elect Siddall

Kelly Y. Siddall, controller of the Procter & Gamble Company, has been elected vice-president of the Cincinnati Control of the Controllers Institute of America.

Soap Size and Quality Frozen By O P A Order

PACKAGE and cake size of all soap products as well as soap quality and serviceability were frozen by OPA order as of July 21 in the first OPA regulation yet issued dealing with minimum commodity standards. Commodity Price Regulation No. 1 covers all forms of household soaps and cleansers, toilet, laundry, granulated, powdered, chips, flakes, washing powders, cleansers and scouring powders. Under the new regulation, no reduction in size of cake or package or reduction in quality or serviceability will be permitted. The regulation applies only to manufacturers.

Aside from a statement that it is hard for a consumer to distinguish small variations in package and cake sizes, the latter usually not marked on the cake, the OPA explained: "Unlimited freedom to change the weight and quality of household soap thus increases the possibility of evasion of the maximum price regulation." Increases in retail prices could result from changes in weight or quality of soap. The retailer in figuring the costs of new items won't charge in fractions of a cent. Charging the full cent considerably increases the mark up on a five or ten cent unit like a cake of soap.

A complicating factor in this whole price situation is the division of the country into marketing areas. Each area sells widely varied types of soap. The regulation prohibits the sale in a given area of types or sizes not sold there prior to the issuance of the order. This eliminates the introduction of soap sold in any other area since that would constitute a new type or size of soap.

While new, smaller and lighter products may not be introduced, larger and better ones may. This, if they are comparable to an already existing item and for sale at the same price. In cases where the ruling works an undue hardship, appeal may be made to the price administrator.

Manufacturers must file with the OPA by September 17, a detailed description of each of their products that were delivered or offered for delivery during the thirty day period ending July 17. This must be accompanied by a description of the areas in which the items were sold during that particular period.

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BIMS Golf at Plandome

With the temperature at 95 in the shade and the humidity even higher, 75 intrepid members of the BIMS of New York plus a few hardy guests took part in the July golf tournament of the organization at the Plandome Golf Club, Plandome, Long Island, on July 28. According to the final score sheet of Martin Schultes, chairman of the New York BIMS, who directed the affairs of the tournament, Richard R. Powell of Plexo Preparations was winner of the first prize, closely followed by Ed A. Bush of Bush-Pan America, son of a rather nifty golfer of a few years back, B. T. Bush.

Other prize winners included Paul Miller of International Cellucotton, David J. Stewart, Jr. of Yardley, James McInnes of Commercial Solvents, O. Dexter Neal of Hilton-Davis Chemical, Ross A. White of E. N. Rowell, John Rau of F. N. Burt Co., Joseph V. Gartlan of Majestic Metal Specialties, Walter B. Smith of Affiliated Products, F. H. Sloan of Naugatuck Aromatics, William E. Terry of American Coating Mills, Walter L. Fretz of Dodge & Olcott, Sewell H. Corkran of E. N. Rowell, A. M. Dinkler, Carl C. Roth of Arrow Engraving, and Frank A. Nicholson of Richardson, Taylor Globe.

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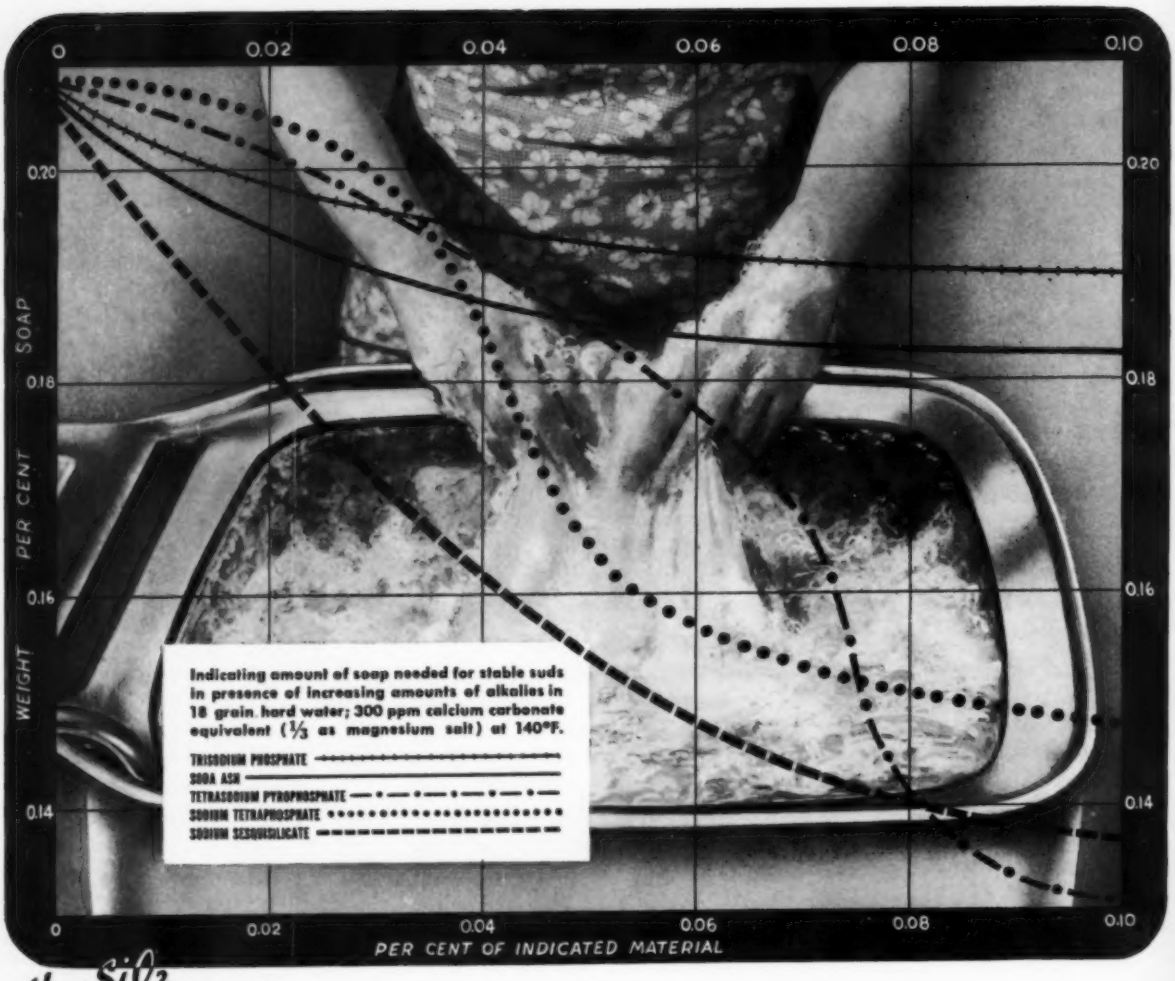
Glycerine Works Called Essential

An order issued July 14 by the Selective Service System (No. 279) lists the glycerine industry as one of the essential occupations employment in which local draft boards can consider as sufficient basis for service deferment.

Hook Drug Co., Indianapolis, won first prize of $400 in War Bonds with this window display in the fourth annual Father's Day Window Display Contest, sponsored recently by Shulton, Inc., of New York.



How SiO_2 Aids Cleaning—

PQ Silicates Improve Lathering

Here's the answer to your problem of how to formulate free-sudsing soaps for hard water areas at an economical cost. PQ Silicates, among the most effective ingredients for building soaps and detergents, are your able allies for rich, stable sudsing ability.

Above is a chart which you will find useful. It can be seen that the pure soap content can be reduced safely and yet provide ample suds by increasing the quantity of silicate. The soluble silica of PQ Silicates plays an important role in increasing sudsing.

Other charts showing different ratio silicates and temperatures are available. May we discuss PQ Silicate Builders for your soaps and cleansers?

PHILADELPHIA QUARTZ CO.

SILICATES OF SODA

125 S. THIRD STREET, PHILA., PA.

Chemical Salesmen Play Golf

The Salesmen's Association of the American Chemical Industry gathered at the Bonnie Briar Country Club, Larchmont, New York, for its second 1942 golf tournament on July 14. Among the prize winners were: Charles F. Alexander of Seldner & Enequist, Inc.; S. Urban of E. R. Squibb & Son; William Mullen of Eastern Industries, Inc.; Lyman Lloyd of Alex. C. Ferguson Co.; George F. Smith of George F. Smith; Leon Miller and George Garland of the Barrett Co.; C. W. Frost of Prior Chemical Co.; V. Williams of Monsanto Chemical Co., and J. R. Fisher of Millmaster Chemical Co. All prizes were paid in War Savings Bonds and Stamps.

The next outing is being held at the Hackensack Golf Club, Oradell, N. J., on August 11. Green fees will be free to all members who participated in either the June or July tournaments. The September tournament will be held on September 15th at North Hills Golf Club, Douglaston, L. I.

Canadian Tube Collection Lags

The Canadian system for collecting used tooth paste and shaving cream tubes is not yielding the volume of salvage "which might reasonably have been expected," officials of the Wartime Prices and Trade Board recently reported. Retail drug stores are the key point for local collections under the salvage plan. But it was stated that some druggists report returns fewer than 25 per cent of sales. The board reported the public as being "not sufficiently impressed with the importance of this salvage enterprise."

Allow Glycerine Freight Charges

An amendment—No. 2 to Revised Price Schedule No. 8 on Glycerine—permits manufacturers of crude glycerine to raise their prices above the maximum price ceiling in order to compensate for the cost of shipping empty drums from the refinery. The amendment became effective July 11, 1942. It applies in cases where the empty drums, used because of the shortage of tank cars, are shipped from a refinery farther away than the one nearest to the manufacturer. This latter proviso was incorporated to assure all refineries of uniform supplies of crude glycerine. It is also felt that the amendment will eliminate the tendency to restrict the free distribution of glycerine. The additional cost will be borne by the refineries and not passed along to the consumer since it will be less than 1.25 per cent of the value of the refined glycerine.

Soap No Reducer, FTC

The Federal Trade Commission has issued an order directing the Peggie Moran Co., Hollywood, and Irene Johnston, Inc., Los Angeles, to discontinue misleading claims in connection with the sale of "Peggie Moran Savon," advertised as an effective agent for removing excess flesh. Findings of the Commission are that the soap contained bentonite, which possesses hygroscopic properties to a slight degree. Because of such action, the findings continue, the clay in the soap might conceivably draw small amounts of water from the body through the skin, but the amounts would be so small as to be negligible. Expert testimony in the record establishes that soap is incapable of affecting the size or weight of the body, according to the findings. Sale of the soap has been discontinued since the Commission started proceedings.

NOPCO Offers New Soap

National Oil Products Co., Harrison, N. J., has just introduced Nopco Complete Soap, a mixture of anhydrous soap and a series of alkalies to which solvents and penetrants have been added. This new product was developed for use by launderers of commercial and institutional work where maximum cleanliness, whiteness and clean odor are essential.

Passes Faulty Soap; Arrested

Keith Light, chief analyst in the testing department of the Department of Public Works, Montreal, Canada, was arrested July 9, on charges of unlawfully altering an analytical report to pass a powdered soap that did not meet laboratory requirements.

Chicago Golf Notes

The golf auxiliaries of the Chicago Drug & Chemical and Chicago Perfumery, Soap and Extract Associations held their third monthly tournament at Glen Oaks Country Club, near Glen Ellyn, Ill., July 14. The following is the list of prize winners:

Class A—1st, Dave Olin; 2nd, C. W. Allen; 3rd, Elmer Smith; 4th, Tom Sawyer.

Class B—1st, A. J. Westerman; 2nd, Henry Woulfe; 3rd, Walter Nay; 4th, Dudley Lum.

Class C—1st, Fritz Degener; 2nd, John A. A. Scott; 3rd, Gerald Pauley; 4th, Z. D. Sappenfield.

Guest prizes to C. E. Larsen and R. Counihan.

August 6 is the date of the next tournament for the two groups, at Tam O'Shanter Country Club. The season's final meet will be held in September.

In the recent intercity tournament between the Chicagoans and the Detroit Drug and Allied Industry golfers, at Olympia Fields Country Club, Chicago, Chicago won the much-coveted Fort Dearborn trophy, for which the two cities have been battling annually since 1935.

"Dutch Cleanser" Ad Plans

Cudahy Packing Co., Chicago, is planning an intensified promotional campaign on behalf of "Old Dutch Cleanser." Network radio time, color pages in magazines, newspaper space and other media will be used, according to Gene Cooper, vice president of Grant Advertising, Inc., who will direct the project.

D.C.A.T. Honors Toohy

S. B. Penick, Jr., Chairman of the Drug, Chemical and Allied Trades Section of the New York Board of Trade at a recent meeting of the executive committee, presented John J. Toohy, retiring chairman of the section, with an engraved gavel. Mr. Penick expressed the appreciation of the entire membership in making the award to Mr. Toohy. Mr. Toohy is manager of distribution for E. R. Squibb & Sons.

OPA Relieves Squeeze of Soap Deal Prices

RELIEF from abnormally low March prices as a result of special merchandising deals, sales, etc., was granted retailers, wholesalers and manufacturers by an amendment to the general maximum price regulation that permits quick adjustment of ceiling prices. In issuing amendment No. 14, the OPA announced that in two instances sellers may adjust their ceiling prices at once to levels prevailing prior to the special sales.

Specifically, the amendment, effective July 21, provides relief under the following conditions: 1) Any seller other than a retailer, whose maximum price for a commodity is based on a special deal or other price reduction limited to four months, may raise his maximum to the highest price at which he delivered the commodity during the 30 days immediately preceding the temporary reduction. 2.) A retailer whose maximum price for a commodity is reduced as a result of a special deal which his supplier made available to him may raise his maximum price to the highest price at which he delivered the commodity during the 30 days immediately preceding the temporary reduction. A retailer whose temporary reduction was not based on a special deal provided by his supplier may apply to the OPA under Section 18 (a) of the General Maximum Price Regulation for adjustment of his maximum price if his ceiling price is abnormally low in relation to his competitors and causes him substantial hardship. Sellers must report to the OPA within 10 days any action taken.

The operation of the amendment is described by a series of questions and answers, three of which deal with soap. They are: Q. "As a promotional campaign in February and March, a soap manufacturer supplied retailers four cakes of soap for the price of three and retailers sold them for the price of three plus one cent. Does the general maximum price regulation require the manufacturer and retailer to continue these special prices?" A. "No, not if the manufacturer can show that the offer was temporary and was to have ended within 23 days from the time it went into effect. In that case the manufacturer is allowed to set his price back to the highest level at which he delivered soap during the 30 days prior to February 1 to the same class of purchaser."

Q. "What about the retailer?" A. "The retailer must continue the special price for all soap which the manufacturer supplied him at the special price. When that is gone, the retailer may return to the highest price at which he made delivery 30 days prior to the sale."

Q. "Soap is among the cost-of-living commodities listed in the general maximum price regulation. Does that alter the requirement in any way?" A. "No, it does not alter the adjustment of prices, but it means that the retailer must file with his local War Price and Rationing Board by the 10th of the following month a report showing the change in his ceiling prices as a result of the discontinuance of the special deal. This supplementary report is necessary in order to keep up-to-date the list of cost-of-living ceiling prices which he earlier filed with his rationing board."

Soap Sales in Sharp Drop

THE sharpest decline in soap sales volume in any three month period since 1935, when the Association of American Soap & Glycerine Producers, Inc., began taking its quarterly soap sales census, was recorded in the three month period ending June 30, 1942. The report, issued late last month by the association, shows manufacturers' figures only. It revealed that the slump was felt in all types of soap and represents a drop of some $31,094,691 below figures for the first three months of the year. Figures are based on the reports of 75 manufacturers who produce more than nine tenths of all the soap made in the United States. In pounds, the second quarter figure for soaps other than liquid, was 60,801,810 as compared with the 896 million pounds sold in the first three months of 1942, the drop from first to second quarter figuring 32.4 per cent.

Half year figures also lagged 12.4 per cent behind those of the first six months of 1941, although they were 4.1 per cent above the total for the second six months of that year. Reduced to pounds the total for the first six months of 1942 was 1,497,825,095. Liquid soap sales in the second quarter were 610,867 gallons as opposed to 725,324 in the first quarter of 1942. This made a half year total of 1,596,-191 gallons; its equivalent in dollars was $1,554,717.

Every classification of soap was affected by the slump. Included were: bar soaps of both the toilet and laundry variety; chips and flakes, granulated, powdered and sprayed soaps; washing powder; and such specialties as: hand pastes, shaving soaps, textile soaps, potash soaps, liquid soaps, packaged soap shampoos, soap stock, etc. Each showed a reduction in sales volume in the second as compared with the first quarter of the year.

While the tabulations are based on manufacturers' deliveries only, they do not, nor cannot show ultimate consumption. They give no information as to production, wholesale or retail sales or stock, purchases or earnings. Figures cover the thirty quarterly periods from January 1, 1935 through June 30, 1942.

BACKGROUND VALUES . . . a PART of the product, APART from the p

THESE pictures suggest some of the reasons why it pays soap manufacturers to let us provide the perfumes for their scented soaps. For instance, the laboratory shown above handles nothing but problems relating to soaps—to creating odors that are stable, long lasting and effective in their coverage of the unpleasant soap stock odor. Modernly equipped and expertly supervised, this laboratory assures the manufacturer a made-to-order perfume for his product. . . . Then we've made provision for ample purchase and storage of essential raw materials. This enables us to pass along to our customers the money-saving advantages of large scale purchases. . . . A third consideration is quality which we control by careful selection of original sources and by sampling and rigidly inspecting every container of oil that enters our plant. Therefore, if you're seeking new or supplementary sources of perfumes for your soaps, remember—the foregoing advantages are all a PART of Fritzsche products, APART from their price!

Photos: Upper left—This 3-tier dru alone accommodates over 250,000 l essential oils. Center — Soap Labo with modern soap making equip Lower right—Taking samples of an i ing shipment for careful analysis b Control Laboratory.

FRITZSCHE BROTHERS, Inc.

PORT AUTHORITY COMMERCE BLDG., 76 NINTH AVENUE, NEW YORK, N. Y.

BRANCH STOCKS

BOSTON CHICAGO LOS ANGELES ST. LOUIS TORONTO, CANADA MEXICO, D. F.

FACTORIES AT CLIFTON, N. J. AND SEILLANS (VAR) FRANCE

Headquarters for
ESSENTIAL OILS • FLAVORS
• AROMATIC CHEMICALS •
PERFUME RAW MATERIALS

Soaps at Toiletries Show

SIXTY manufacturers of toilet goods participated in the first annual trade show of the Chicago Associated Toiletries Salesmen, held at the Palmer House, that city, July 12 to 18. Originally scheduled for later in the fall, the date had been advanced in anticipation of possible future transportation difficulties.

Allen B. Wrisley Co., Chicago, gave the top position in their exhibit to a castile shampoo bar which captured attention because of the use of soybean oil as a replacement for coconut oil. Company representatives stated it was their belief the Wrisley Company is the first to reach the market with a soap using soy oil in place of coconut oil. The new soap is said to be smooth and bland and to produce a heavier, creamier lather than was obtainable with coconut oil. Use of soybean oil has been under investigation for six months by the Wrisley Company and the castile bar, weighing 3½ pounds, was ready for marketing in June. Wrisley's exhibit also featured a new "Spruce" line of shaving soap offered in brightly colored ceramic mugs, with other shaving accessories included. Many novelty soaps which are being advertised nationally, were also shown as were a large line of five-cent grocery items, offered in a varied assortment of shapes and odors. Salesmen in attendance included Carl Mayer and A. R. Kopan, Chicago, Henry Mundt, northern Indiana field man, and Paul Litkowski, covering southern Indiana, Kentucky and Ohio.

Hewitt Soap Co., Dayton, O., with R. P. McLaughlin in charge, exhibited a large shower bar with "non-skid" grip, together with novelty gift packages, packaged laundry flakes and unpackaged soaps for the drug and chain store trade.

The House For Men, Inc., Chicago, introduced a new 4½ ounce cake of shaving soap in their "His" line for men. The new item, superfatted and lanolated, is "aged before we sell it," and sold with a plastic shaving bowl for which refills are available. The company is now seven years old, according to C. F. Claypool, sales manager.

Yardley & Co., New York, featured a new $1.00 size mammoth toilet cake for men in their "Old English" line and also offered an assortment containing bath and guest size cakes in a package newly designed to resemble an attractive chest. Walter E. Wells, Chicago district salesman, was in charge.

Alfred D. McKelvy & Co., Minneapolis, offered for holiday sale a new gift package containing three bars of their "Seaforth" hand soap. Another novelty was "Seaforth" shaving soap in a "Tom and Jerry" mug. H. C. Richardson, sales manager, said the company plans to move its office and plant from Minneapolis to quarters in Rockefeller Plaza, New York, sometime in August.

Luxor, Inc., New York, had an extensive display of their large line of toiletries. Among soaps shown "Savon Sachet," in seven odors and two sizes, guest and bath, was prominent. The company's "Auditorium" bath soap was also exhibited, along with a lanolin complexion soap, "Star" castile, "American Beauty" hand soap in rose bud design, bath crystals in 5-pound sacks, and other accessories. V. H. Allen, Chicago sales manager, had charge.

Milkmaid, Inc., New York, offered a giant size bath cake, weighing ¾-pound, which retails for $1.75. Also stressed were their "Milkmaid" complexion soaps, whose formula utilizes whole fresh milk. Novel promotional ideas and elaborate window displays, said Maxwell Bower, general sales manager, have made the new milk soaps and associated cosmetic items extensively popular since their introduction one and a half years ago. Helen McNiece assisted Mr. Bower.

Roycemore Toiletries, Inc., Chicago, had a display of novelty soap designs, specially produced to mark their fifth anniversary. A "Jungle Swing Band," with a monkey, elephant and lion molded in soap and packaged in a jungle setting, led the line, which included, among others, items, labelled "Facts of Life," "Four Seasons," "Pony Boy," "Tubbies," etc. J. G. Griswold, president, and L. C. Larson, midwest representative, greeted visitors.

Elias Shaker & Co., Chicago selling agency for Old South Toiletries, included an artistic display of "Old South" soaps in their exhibit. One new item, just out, was a gift package, which included bath soap, a decanter of cologne and one of bubble bath, all contained in a carton designed to represent a clock of 1820 vintage. F. E. Pearsall, sales manager, and John Sutherland, sales supervisor for the midwestern states, were in charge.

Lightfoot, Schultz & Co., were on hand with their new Christmas line of novelty soap designs. One with an appeal to children was a shower ball, representing a sled, with a stout cord and a decalcomania rose bud for ornament. Riding horses, skating ducks, "Dumbo," "Elsie" the cow, and other designs were in evidence. "Home Defense" was the title of a rolling pin design, packaged in patriotic red, white and blue colors, and appeal to the sportsman was made by a duck of soap, seated on a bath brush. For men, also, was a "Ruf-Cut" package, containing four large cakes of bath soap. Bert Lazerwitz, Chicago, represented the company.

Sento-Foam Co., New York, offered a liquid bubble bath in a newly designed glass decanter, with R. Langford in charge. Bathashay Distributors, Los Angeles, Calif., had a powdered "Foaming Bath" water softener in three sizes. Neil J. Colligan, Chicago sales manager in charge.

C-P-P Chicago Free Goods

Colgate - Palmolive - Peet Co., Jersey City, N. J., distributed coupons to Chicago housewives last month, one of which offered a cake of "Palmolive" soap free with each purchase of two regular size cakes. The other gave a 10-cent discount on a package of "Super Suds" laundry flakes.

It's time for MODERN Air Raid Protection!

WHEN it's open season for flies and mosquitoes, it's "A-penn" season! When squadrons of flying pests are nose-diving... or diving at your nose... then's the time to put A-penn Fly Spray into action.

A-penn will not only establish mastery of the air for your side... but it's as pleasantly perfumed as it is positive in action.

Crown Can supplies the A-penn Oil Company with the containers in which A-penn Fly Spray is packed . . . and they are cans designed to protect the contents as effectively as the contents protect the home from insect pests!

CROWN CAN COMPANY, PHILADELPHIA, PA., *Division of Crown Cork and Seal Company*

CROWN CAN

BALTIMORE • NEW YORK • ST. LOUIS • HOUSTON • MADISON • ORLANDO • FORT WAYNE • NEBRASKA CITY

Victor Phosphorous Exhibit

An exhibit designed to tell the complete story of phosphorous and how its compounds serve mankind has just been opened in Chicago's Museum of Science and Industry. The exhibit was built at a cost of $30,000 under the supervision of the technical staff of Victor Chemical Works, Chicago. An interesting phase of the exhibit is that devoted to showing the work of trisodium phosphate for softening water, tetra potassium pyrophosphate in liquid soaps, sodium copper polyphosphate used as a fungicide and dicalcium phosphate in tooth pastes and powders.

WPB Toiletries Head Speaks

C. E. Willard, chief of the toiletries and cosmetics branch of the War Production Board, addressed Chicago manufacturers of cosmetics and toiletries at a meeting sponsored by the Association of Commerce July 8. How companies in these fields can meet retrictions placed on their operations by the war effort, was the theme of his talk.

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Canada Revises Soap Prices

The Wartime Prices and Trade Board of Canada announced on July 17 that some changes had been made in a previous board order setting manufacturers' maximum prices for soap. The original order, dated last March, applied maximum prices of June, 1941, rather than prices in the basic period, September 15 to October 11, 1941, to a list of groceries specified in an accompanying schedule.

It included "soap, laundry and toilet; cakes, flakes, and powders." This is deleted from the latest order and the following words substituted: "Soap of all kinds except liquid, granulated, powdered and flake soaps; granulated, powdered and flake soaps when packaged and sold by the manufacturer in cartons not exceeding five pounds net weight when packed."

Manufacturers are required, effective July 17, to revert to June prices "only with respect to sales of soap coming within the foregoing description," the board said.

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Soap Employment Index Slumps

Both the index numbers of employment of wage earners and pay rolls in the soap industry during May showed a sharp drop from April, 1942. The employment index figure for May was 87.3 as against 91.8 for April. May, 1941 was 92.2. (3-year average 1923-25 is 100). The decline was also noticeable in payrolls in May—the index for this month being 131.3. It contrasts sharply with the 136.9 figure registered in April, although still showing a margin above the May, 1941 figure of 125.7.

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Weidman of Dreyer Marries

Henry A. Weidman, secretary of P. R. Dreyer Inc., New York, essential oils and aromatic chemicals, was married on July 8, to Miss Florence C. Samsel. The couple honeymooned in Connecticut and will make their home in Ozone Park, L. I.

Soap Sculptors Win $2,200

Cash prizes totalling $2,200 were awarded by Procter & Gamble Co. to winners of the 18th annual National Soap Sculpture Competition in which "Ivory" soap is used as the medium. In making public the prize winners, the National Soap Sculpture Committee announced the 19th annual competition, the details of which will be made known shortly.

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Boston Bims Golf Aug. 20

On August 20 at the Woodland Country Club near Boston, the BIMS of Boston will hold their mid-summer golf tournament. According to an announcement by Chairman Robert C. Kelly of the BIMS of Boston, the August tournament will be an elaborate affair replete with an orchestra and numerous handsome prizes.

At the Boston BIMS golf tournament held on July 9 at the Commonwealth Country Club, Newton, Mass., sixty members and guests turned out for golf and dinner. Grand prize for the day was won by Hart Harris of S. B. Penick & Co. Low gross prize went to Robert Marsh with a neat 75, while Robert Carney was winner of low net. Other member prize winners were Cliff Roper, Bunny Williams, Herb Farrier, and Roy Schaberg. Prize winners among the guests were Bug Quadling and Dick Jerfens. Out of town visitors included V. E. Williams of Monsanto, New York, and Harold Green of Sonneborn, Buffalo. In the prize presentation ceremony, Chairman Kelly was assisted vocally by Florin Hailer of United Drug and others who told him what to say, but Mr. Kelly refused to say it. P. S. The party was voted a very large and complete success.

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J. R. Watkins Man Dies

H. E. Bartz, sales manager in charge of central and western city sales for the J. R. Watkins Co., Winona, Minn., was accidentally drowned during his vacation near his country home at Minnieska, Minn., on the Mississippi River late in June. His body was not recovered for a period of ten days. Funeral services were held in Winona on July 8.

ROLL OUT THE DRUMS

HANDLE CAREFULLY—EMPTY AND RETURN PROMPTLY

DRUMS ARE AN all-important life line in the transportation of chemical materials. Today, this life line faces a crisis—for our present national supply of drums *must* be made to do the big job ahead.

That means everyone of us must do his part to "Roll out the drums." When drums arrive at your plant, make sure they are handled carefully. Empty the contents as soon as you can. Don't use drums for other material. Don't even rinse them. Be sure to replace the bungs and tighten securely. Then, keep those drums moving on a rush round trip—many round trips.

Do it today—and every day—for *VICTORY*.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

New York • St. Louis • Chicago • San Francisco • Los Angeles • Seattle • Houston

CONTRACTS

Treasury Soap Awards

The following awards were made by the Treasury Procurement Department, Washington, D. C., in a recent opening for miscellaneous supplies: Stevens Soap Co., Brooklyn, 17,920 lbs. powder soap at 3.15c a lb. and 150,000 lbs. of powdered laundry soap at 2.83c a lb. In the same opening Colgate-Palmolive-Peet Company, Jersey City, N. J., was awarded 17,500 lbs. powdered toilet soap at 12.27c a lb.

Fort Riley Cleaner Award

E. I. du Pont de Nemours, Wilmington, Dela., submitted the low bid on 1,300 pints of chemical cleaner at 30c a lb. which was accepted by the Army Quartermaster Corps, Fort Riley, Kansas, in a recent opening.

Justice Dept. Award

In a recent opening by the Department of Justice, Lewisburg, Pa., E. I. du Pont de Nemours & Co., Wilmington, submitted the low bid on 25,000 lbs. of solvent at 6.63c a gal., which was accepted.

Printing Office Cresol Bid

James Good, Inc., Philadelphia, submitted the low bid on 200 gals. of noncorrosive cresol at 42c a gal. in a recent opening by the Printing Office, Washington, D. C.

Treasury Soap Bid

Cleveland Soap Manufacturing Co., Cleveland, submitted an alternate low bid on 180,000 lbs. of chip soap at $9.60 100 lbs., in a recent opening by the Treasury Procurement Department, Washington, D. C.

Post Office Soap Bids

In a recent opening by the Post Office, Washington, D. C., the following low bids were submitted: Pioneer Soap Co., San Francisco, 1,500 lbs. grit soap $120, 30,000 lbs. laundry soap $1,815, and 3,750 lbs. of toilet soap $412.50; Procter & Gamble Distributing Co., Baltimore, 10,000 cakes floating toilet soap $133.70; Sterling Supply Corp., Philadelphia, 30,000 lbs. chip soap $3,060; Stevens Soap Corp., Brooklyn, N. Y., 10,000 lbs. soap powder $365 and 20,000 lbs. trisodium phosphate $840.

N. Y. Navy Cleanser Bid

B. T. Babbitt, New York, submitted the low bid on 136,000 lbs. of cleansing powder at 2.8c a lb. in a recent opening by the New York Navy Purchasing Office, New York.

N. Y. Navy Bids

In a recent opening by the New York Navy Purchasing Office, New York, the following low bids were submitted: James Huggins & Son, Malden, Mass., 3,000 gals. cresylic disinfectant at 38c a gal. and Longyear Co., New York, 150 gals. polar type, rust-preventive compound at $124.50 total.

Veterans Adm. Wax Bid

In a recent opening by the Veterans Administration Procurement, Washington, D. C., Chadakoff Chemical Products, New York, was the low bidder on 66,000 gals. water emulsion floor wax at $1 a gal. to be divided between Veterans Administration at Perryville, Md. and Hines, Ill.

Army Ordnance Liquid Soap

Peerless Chemical Co., Detroit, submitted the low bid on 300 gals. of liquid soap at 95c a gal, which was accepted, in a recent opening by the Army Ordnance, Madison, Ind.

Post Office Soap Bids

The following low bids for soap were submitted in a recent opening by the Post Office Department, Washington, D. C.: John T. Stanley Co., New York, 20-10 lb. cans of auto soap at 8.3c a lb. and 62-50 lb. cans of auto soap at 7.25c a lb.; Scholler Brothers, Philadelphia, 10 half-barrels auto soap at 6c a lb. and 41 barrels at 5.8c a lb.; Eagle Soap Co., Brooklyn, N. Y., 2,400 lbs. grit cake soap at 4.1c f.o.b. cars or 4.55 f.o.b. Washington, and Stevens Wiley Manufacturing Co., Philadelphia, 15,360 lbs. of scouring powder at 2.4c a lb., f.o.b. cars.

N. Y. Navy Wax Bid

Buckingham Wax Corp., Long Island City, N. Y., submitted the low bid on 1,000 five-gallon containers of floor wax at 64.8c a gal., in a recent opening by the New York Navy Purchasing Office, New York. In the same opening Slick-Shine, Newark, N. J., submitted the low bid on 10,000 lbs. of painted surface cleaning compound at 7.5c.

N. Y. Navy Bids

In a recent opening by the New York Navy Purchasing Office, New York, the following low bids were submitted: Colgate-Palmolive-Peet Co., Jersey City, N. J., 700,000 lbs. of salt water detergent at 7.7c a lb.; C. F. Jameson & Co., Haverhill, Mass., 4,000 lbs. silver polish at $620.40 total; Sharpe & Dohme, Philadelphia, 20,000 1-pint bottles camphor and soap liniment at 22c a bottle; Colgate - Palmolive - Peet Co., Jersey City, N. J., 12,500 lbs. of laundry powder soap at 3.55c a lb., and Piedmont Paint Manufacturing Co., Greensville, S. C., 34,300 lbs. painted surface cleaning compound at 6.548c a lb.

FTC Restrains Climax Claims

Climax Cleaner Mfg. Co., Cleveland, has been directed by the Federal Trade Commission to stop its claims that "Climax Wall Paper Cleaner" will not crumble when used for cleaning all types of wall paper. The order prohibits use of the words "non-crumbling" or "crumble-less' to describe a wall paper cleaner which will crumble when used on certain types of paper. According to the Commission's findings, misleading statements were made over the radio, on labels, and in other advertising matter.

WE have worked for years on the synthesis of some of the principal odors for soap. Today, with natural raw materials scarce and high in price, the fruits of this development work are yours at a time when you really need them. • Actually, it is no longer necessary to depend upon uncertain supplies of the natural products, so nearly have these artificial similes approached perfection. • You can use artificials in increasing proportions, or to replace the natural product entirely. • These beautiful similes are available at prices which are well within your reach. Entirely fabricated in the United States from domestic raw materials.

Write for working samples and prices.

NATURAL RAW MATERIALS IN STOCK — *for immediate delivery. Many of the scarce essential oils are still available through Albert Verley & Company. Write for samples and prices — subject, of course, to prior sale.*

Albert Verley & co.
AROMATICS

ALBERT VERLEY AND COMPANY, 232 E. OHIO ST., CHICAGO, ILL.
114 E. 25TH ST., NEW YORK • MEFFORD CHEMICAL COMPANY, LOS ANGELES

TRADE MARKS

The following trade-marks were published in the July issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Marks

DERMULSION — This in solid letters describing hand solvent with antiseptic properties. Filed by Excelsior Varnish Works, Inc., Cleveland, Mar. 19, 1942. Claims use since Jan. 15, 1942.

GUARDEX—This in solid letters describing mothproofing preparation. Filed by Arzone Products Co., Chicago, Apr. 11, 1942. Claims use since Mar. 15, 1941.

VICTORY—This in solid letters over a drawing of a flag describing white shoe cleaner. Filed by Victory Products Co., Birmingham, Ala., Sept. 29, 1941. Claims use since Sept. 19, 1941.

COSMATA—This in solid letters describing soap. Filed by Cosmata, Inc., Long Island City, N. Y., Nov. 19, 1941. Claims use since Mar. 4, 1941.

5 STAR—This in solid letters describing liquid cleaning compound. Filed by Silver Seal Products, Inc., Denver, Feb. 1, 1941. Claims use since Jan. 2, 1941.

1-2-3—This in blocked numerals describing abrasive cleanser. Filed by Strykers Soap Co., San Francisco, Mar. 13, 1942. Claims use since Feb. 19, 1942.

TALLSO—This in solid stenciled letters describing crude tall oil soap. Filed by West Virginia Pulp & Paper Co., New York, May 14, 1942. Claims use since Apr. 28, 1942.

PC—This on an insecticide container in a sketch showing a hand spraying insecticide dust on a baseboard. Filed by P. C. Product Co., St. Louis, Sept. 30, 1940. Claims use since Sept. 26, 1940.

CARNEE—This in solid letters describing liquid shampoo soap. Filed by The Dill Co., Norristown, Pa., July 26, 1941. Claims use since Dec. 13, 1940.

SNO-SEAL — This in solid antique letters describing leather polish. Filed by Ome Daiber, Seattle, Feb. 12, 1941. Claims use since Jan. 15, 1937.

SCENT O FOAM—This in fanciful script letters describing liquid and powdered soap. Filed by The Theon Co., Inc., New York, Apr. 25, 1942. Claims use since June 1, 1940.

SANI-WHITE — This in solid miniature letters describing white shoe polish. Filed by Frenchee Chemical Co., Richmond Hill, New York, Apr. 27, 1942. Claims use since Feb. 2, 1941.

VENOMOTH—This in old English letters on a drawing of a moth and over the words "Poison to Moths," describing chemical with moth-proofing properties. Filed by Venomoth Co., Los Angeles, Sept. 28, 1940. Claims use since Mar. 1, 1935.

PD & Co.—This in a fanciful arrangement within a circular emblem on which the words "Medicamenta Vera" is printed, describing antiseptics, dentifrices, germicides, insecticides, mouth washes, and tooth paste. Filed by Parke, Davis & Co., Detroit, Mar. 31, 1942. Claim use since Mar. 1, 1881.

Trade Marks Granted

396,088. Disinfectant. Filed by Johnson Chemical Co., Brooklyn, Apr. 28, 1941. Serial No. 443,060. Published Apr. 21, 1942. Class 6.

396,102. Anti-rust and flushing compound. Filed by Commercial Solvents Corp., New York, July 28, 1941. Serial No. 445,685. Published Apr. 21, 1942. Class 6.

396,105. Insecticides. Filed by California Pharmacal Co., Los Angeles, Aug. 5, 1941. Serial No. 445,975. Published Mar. 31, 1942. Class 6.

396,108. Soap. Filed by Chas. W. Young & Co., Philadelphia, Aug. 30, 1941. Serial No. 446,712. Published Apr. 21, 1942. Class 4.

396,139. Athlete's foot preparation. Filed by Drug Guild, Inc., New York, Dec. 24, 1941. Serial No. 449,733. Published Apr. 21, 1942. Class 6.

396,150. Insecticides. Filed by Stanley Home Products, Inc., Westfield, Mass., Jan. 6, 1942. Serial No. 450,030. Published Apr. 14, 1942. Class 6.

396,171. Antiseptic Mouth Washes. Filed by Marshall Field & Co., Chicago, Jan. 26, 1942. Serial No. 450,476. Published Apr. 14, 1942. Class 6.

396,188. Antiseptic, germicidal, and fungicide preparation. Filed by Perm-Aseptic Co., New York, Feb. 5, 1942. Serial No. 450,771. Published Apr. 21, 1942. Class 6.

396,202. Insect spray. Filed by American Oil Co., Baltimore, Feb. 16, 1942. Serial No. 450,986. Published Apr. 14, 1942. Class 6.

396,215. Agricultural insecticides and chemicals. Filed by Central Chemical Corp. of Maryland, Hagerstown, Md., Feb. 20, 1942. Serial No. 451,103. Published Apr. 21, 1942. Class 6.

396,320. Cleaning compound and liquid soap. Filed by Plunkett Chemical Co., Chicago, Feb. 3, 1942. Serial No. 450,693. Published Apr. 28, 1942. Class 4.

396,321. Metal and porcelain cleaning compound. Filed by Plunkett Chemical Co., Chicago, Feb. 3, 1942. Serial No. 450,693. Published Apr. 28, 1942. Class 4.

396,322. Soap. Filed by Armour & Co., of Delaware, Chicago, Feb. 6, 1942. Serial No. 450,776. Published Apr. 28, 1942. Class 4.

396,338. Soap. Filed by Gimbel Brothers, Inc., New York, Feb. 19, 1942. Serial No. 451,080. Published Apr. 28, 1942. Class 4.

(Turn to Page 67)

MARKETS

As of August 3, 1942

IN general approximately the same raw material market price conditions obtained during the period just ended as in the previous month. This despite applications of price ceilings in several more instances and the important "roll-back" in the case of tallow and greases. At this writing it is too early to know the effect on the market since the order only became effective on August 1. The relief it grants the soap maker who was caught in the "squeeze" between high raw material costs and lowered selling prices should have a noticeable effect on the market. That activity in the market will commence shortly is almost a foregone conclusion following the sharp drop in the soap output reported for the second quarter of the year by the Association of American Soap & Glycerine Producers. The effect of government orders for soap and glycerine will also make itself felt here. What price fluctuations there were were, for the most part, slightly downward. A few advances in the midst of the handful of raw materials not yet held down by ceilings were recorded. In general the market condition was firm.

Quotations for 88% tallow chip soap were slightly lower as a result of the general reduction of soap prices. Eleven cents was the figure given. The 92% powder was lowered from 12⅛ to 11⅜.

Amendment No. 6 to Revised Price Schedule No. 53 set maximum prices for coconut oil, castor oil, murumuru oil, palm oil, perilla oil, commercial oiticica oil, teaseed oil, tung oil, and ucuhuba crude vegetable oil at the highest representative price at which each of these oils sold under the schedule. Prices for babassu, pataua, and tucum were set on the basis of 111% of sales prices made during a period prior to Nov. 26, 1941. Because of higher procurement costs, maximum price on rapeseed oil is set at 11.50 cents per pound in bulk, c.i.f., New York. Ceilings were set on cohune, ouricuri, andiroba, palm kernel, sunflower seed and sesame oils based on the maximum price of the oil with which they are closest in quality and used interchangeably. The inedible tallow ceiling is 8⅝ cents a pound f.o.b., Chicago and New York.

Essential oil prices in several instances were lowered. These were: light cedar wood, clove, California lemon, native lemongrass, California orange, peppermint and bergamot oil. Two upward revisions noted were in sandalwood and spearmint.

Several important rulings affecting disinfectant and insecticide raw materials were issued during the period covered. One of these was a measure of relief for disinfectant manufacturers that "rolled back" the price of pine oil to prices prevailing in October, 1941. The three classifications covered were: basic pine oil, whose maximum price was set at 55 cents a gallon, f.o.b. plant, in carload lots; natural alpha terpineol was set at $1.05 per gallon, tank car lots, f.o.b. plant; and light gravity pine oil priced at a maximum of 50 cents a gallon, f.o.b. plant.

While the price of crude glycerine has not been "rolled back," manufacturers were, last month, authorized by the O.P.A. to add to the maximum price the excess freight charge for returning empty drums when shipments are made to a refinery more distant from a plant than the nearest refinery.

As forecast earlier in the month, the price of imported cresylic acid for resale in the United States was reduced to $1.10 a gallon by the O.P.A. Previously it was reported to have gone as high as $1.80. The new price went into effect August 5. The ceiling price for the domestic product is about 70 cents a gallon.

Now that orders for pyrethrum for use in household insecticides are being returned from Washington, a more definite idea of the procedure involved has been obtained. Orders are returned in anywhere from one to two weeks. Those that have been returned permit small amounts of pyrethrum to be shipped in critical cases for household insecticides. The sizes of these orders have been cut down roughly from a half to a third. These were principally small orders requiring up to a barrel. In the latter case a half barrel was authorized, etc. It is expected that this rate will be maintained unless government needs interfere.

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Set Fat Salvage Prices

The O.P.A. has just established a four-cent-a-pound ceiling price on waste kitchen fats sold by housewives to retail meat dealers, effective July 31. Simultaneously, a five-cent-a-pound ceiling was set up for the sale of those same fats from meat dealers to renderers.

A 10 to 13% saving on the selling price, depending on the oil and fat content, will be gained by the renderers as a result of this "roll back" in the cost of their raw materials. This move is designed to relieve the renderer of the squeeze he suffers as a result of the one cent "roll back" on the price of tallows and greases which became effective August 1. However, it is only a temporary one pending further study of the entire problem.

PRICES

(As of August 3, 1942)

Minimum Prices are for car lots and large quantities. Price range represents variation in quotations from different suppliers and for varying quantities.

Chemicals

Acetone, C.P., drums	lb.	$ .08½	$ .09
Acid, Boric, bbls., 99½%	ton	106.00	128.00
Cresylic, drums	gal.	.81	.86
Low boiling grade	gal.	.81	.86
Muriatic, C. P., carboys	lb.	.08	—
Oxalic, bbls.	lb.	.11¼	.14¼
Adeps Lanae, hydrous, drums	lb.	.32	.34
Anhydrous, drums	lb.	.33	.35
Alcohol, Ethyl, drums	gal.	8.19	8.25½
Complete Denat., SD1, dms., ex.	gal.	.60	.65
Alum. Potash lump, bbls.	lb.	.04½	—
Ammonia Water, 26°, drums	lb.	.02¼	.02½
Ammonium Carbonate, tech., drums	lb.	.08¼	.09¼
Bentonite	ton	25.00	51.00
Bleaching Powder, drums	100 lb.	2.25	3.35
Borax, pd., bbls., bags	ton	50.00	75.00
Carbon Tetrachloride, car lots	gal.	.73	1.17
L. C. L.	gal.	.80	1.27
Cresol, U.S.P., drums	lb.	.11	.11¾
Creosote Oil	gal.	.141	.15½
Feldspar, works	ton	30.00	35.00
Formaldehyde, bbls.	lb.	.05¾	.07¼
Fullers Earth	ton	8.50	15.00
Glycerine, C.P., drums	lb.	.18¼	.19¼
Dynamite, drums	lb.	.18¼	.18¾
Saponification, drums	lb.	.12¾	.14¾
Soap lye, drums	lb.	.11½	—
Lime, live, bbls.	ton	6.25	13.00
Mercury Bichloride, drums	lb.	2.24	2.39
Naphthalene, ref. flakes, bbls.	lb.	.08	—
Orthodichlorbenzene	lb.	.07½	.08½
Paradichlorbenzene, drums	lb.	.11	.15
Petrolatum, bbls. (as to color)	lb.	.03½	.08
Phenol (Carbolic Acid) drums	lb.	.12½	.14¼
Pine Oil, drums	gal.	.50	1.05
Potash, Caustic, solid	lb.	.06¼	.06¾
Flake, 88-92%	lb.	.07	.07¼
Liquid, 45% basis	lb.	.02⅞	.03¼
Potassium Carbonate, solid	lb.	.06½	.06¾
Liquid	lb.	.03	.03⅛
Pumice Stone, coarse	lb.	.03½	.04¾
Rosins (net wt., ex dock, New York)—			
Grade D to H	100 lb.	3.58	3.62
Grade I to N	100 lb.	3.63	3.67
Grade WG to X	100 lb.	3.69	3.73
Rotten Stone, dom., bags	lb.	.02½	.04
Silica	ton	20.00	27.00
Soaps—			
Tallow Chip, 88%	lb.	.11	.12⅛
Powder, 92%	lb.	.11⅜	.12½
Powdered, White Neutral	lb.	.25½	.42
Olive Oil Paste	lb.	.40	—
Shampoo Base	lb.	.18	.20
Liquid Concentrate, 30-32%	gal.	.75	.79
Soda Ash, cont., wks., bags, bbls.	100 lb.	1.05	1.45
Car lots, in bulk	100 lb.	.90	.95
Soda Caustic, cont., wks., solid	100 lb.	2.30	—
Flake	100 lb.	2.70	2.95
Liquid, tanks, 47-49%	100 lb.	1.92½	1.95
Soda Sal., bbls.	100 lb.	1.10	1.30
Sodium Chloride (Salt)	ton	14.20	18.00
Sodium Fluoride, bbls.	lb.	.08	.09¼
Sodium Hydrosulfite, bbls.	lb.	.17	.18
Sodium Metasilicate, anhyd.	100 lb.	4.00	5.30
Granulated	100 lb.	2.50	3.55
Sodium Pyrophosphate	100 lb.	5.25	6.80
Sodium Silicate, 40 deg., drum	100 lb.	.80	1.20
Drums, 52 deg. wks.	100 lb.	1.40	1.80
Tar Acid Oils, 15-25%	gal.	.27½	.33½
Triethanolamine	lb.	.18	.20
Trisodium Phosphate, bags, bbls.	100 lb.	2.70	4.30

Oils — Fats — Greases

Babassu, tanks, futures	lb.	.11⅛	Nom.
Castor, No. 1, bbls.	lb.	.14	.14½
No. 3, bbls.	lb.	.13¾	.14¼
Coconut (without excise tax)			
Manila, tanks, N. Y.	lb.	No Prices	
Tanks, Pacific Coast, futures	lb.	No Prices	
Copra, bulk, coast	lb.	No Prices	
Corn, tanks, West	lb.	.12¾	—
Cottonseed, crude, tanks, mill	lb.	.12¾	—
PSY, futures	lb.	.13⅞	.14⅛
Fatty Acids—			
Corn Oil, tanks, Chicago	lb.	.14	.14½
Coconut Oil, tanks, Twitchell, Chi.	lb.	.18½	Nom.
Cotton Oil, tanks, Chicago	lb.	.14	—
Settled soap stock, Chicago	lb.	.03⅞	.04
Boiled soap stock, 65%, Chi.	lb.	.04⅞	.05
Foots, 50%, Chicago	lb.	.03⅞	.04
Castor Oil, split, tanks, N. Y.	lb.	.20¾	.21¼
Linseed Oil, split, tanks, N. Y.	lb.	.18½	—
Distilled	lb.	.21	.21½
Myristic acid, distilled, tanks, N.Y.	lb.	.19	.19½
Palm Oil, white, tanks, N. Y.	lb.	.13	.13½
Single distilled	lb.	.12	—
Soybean Oil, split, tanks, N. Y.	lb.	.16	—
Distilled	lb.	.19½	.20
Red Oil, bbls., dist. or sapon.	lb.	.1330	.1430
Tanks	lb.	.1245	—
Stearic Acid, saponif.			
Double pressed	lb.	.1580	.1680
Triple pressed	lb.	.1885	.1985
Greases, choice white, tanks	lb.	.08⅞	—
Yellow	lb.	.08¾	—
Lard, city, tubs	lb.	.12½	.12¾
Linseed, raw, bbl.	lb.	.1350	.1370
Tanks, raw	lb.	.1260	.1280
Olive, denatured, bbls., N. Y.	gal.	4.20	4.30
Foots, bbls., N. Y.	lb.	.19½	Nom.
Palm, Sumatra, cif. New York, Tanks	lb.	No Prices	
African, tanks, ex. ship	lb.	.08¼	Nom.
Palm, kernel	lb.	No Prices	
Peanut, crude, tanks, mill	lb.	.13	Nom.
Soya Bean, domestic, tanks, crude	lb.	.12½	Nom.
Stearin, oleo, bbls.	lb.	.1054	—
Tallow, special, f.o.b. N. Y.	lb.	.08½	—
City, ex. loose, f.o.b. N. Y.	lb.	.08⅝	—
Teaseed Oil, crude	lb.	No Prices	

(As of August 3, 1942)

Essential Oils

Almond, Bitter, U.S.P.	lb.	$3.50	$3.75
Bitter, F.F.P.A.	lb.	4.75	5.00
Sweet, cans	lb.	2.25	2.50
Anise, cans, U.S.P.	lb.	3.35	3.75
Bay, 55-66% phenols, cans	lb.	1.60	2.10
Bergamot, coppers	lb.	32.00	Nom.
Artificial	lb.	2.25	6.50
Birch Tar, rect., cans	lb.	—	—
Crude, cans	lb.	—	—
Boise de Rose, Brazilian	lb.	5.00	5.25
Cayenne	lb.	—	—
Cade (juniper tar), drums	lb.	1.50	Nom.
Cajeput, tech, drums	lb.	—	2.10
Calamus, cans	lb.	—	—
Camphor, Sassy, drums	lb.	—	—
White, drums	lb.	—	—
Cananga, native, cans	lb.	17.00	17.50
Rectified, cans	lb.	18.25	20.00
Cassia, Redistilled, U.S.P.	lb.	10.50	12.00
Cedar Leaf, cans	lb.	1.05	1.35
Cedar Wood, light, drums	lb.	.75	1.00
Citronella, Java, drums	lb.	—	—
Citronella, Ceylon, drums	lb.	1.30	1.70
Clove, U.S.P., cans	lb.	1.80	2.00
Eucalyptus, Austl., U.S.P., cans	lb.	1.05	1.30
Fennel, sweet, cans	lb.	4.20	—
Geranium, African, cans	lb.	30.00	Nom.
Bourbon, cans	lb.	24.00	—
Turkish (Palmarosa)	lb.	5.25	5.50
Hemlock, cans	lb.	1.20	1.25
Lavender, 30-32% ester, cans	lb.	—	—
Spike, Spanish, cans	lb.	4.25	4.35
Lemon, Ital., U.S.P.	lb.	—	Nom.
Cal.	lb.	3.10	—
Lemongrass, native, cans	lb.	3.00	3.50
Linaloe, Mex., cases	lb.	4.25	—
Nutmeg, U.S.P., cans	lb.	4.75	6.00
Orange, Sweet, W. Ind., cans	lb.	6.00	6.25
Italian cop	lb.	8.00	Nom.
Distilled	lb.	1.70	—
California, expressed	lb.	3.00	—
Origanum, cans, tech	lb.	2.75	2.90
Patchouli	lb.	8.00	8.50
Pennyroyal, dom.	lb.	—	—
Imported	lb.	3.15	3.25
Peppermint, nat., cans	lb.	5.50	5.75
Redis., U.S.P., cans	lb.	6.00	6.25
Petitgrain, S. A., cans	lb.	1.95	2.20
Pine Needle, Siberian	lb.	3.00	3.25
Rosemary, Spanish, cans	lb.	2.25	2.30
drums	lb.	2.10	2.15
Sandalwood, dom., dist., U.S.P.	lb.	6.00	6.75
Sassafras, U.S.P.	lb.	2.00	2.20
Artificial, drums	lb.	2.00	—
Spearmint, U.S.P.	lb.	—	3.25
Thyme, red, N. F.	lb.	2.60	3.25
White, N. F.	lb.	2.85	3.50
Vetiver, Java	lb.	42.00	50.00
Ylang Ylang, Bourbon	lb.	—	—

Aromatic Chemicals

Acetophenone, C. P.	lb.	$1.55	$1.60
Amyl Cinnamic Aldehyde	lb.	—	—
Anethol	lb.	2.25	2.40
Benzaldehyde, tech.	lb.	.45	.55
N. F. VI	lb.	.85	.95
Benzyl, Acetate	lb.	.59	Nom.
Alcohol	lb.	.63	.75
Citral	lb.	5.50	7.00
Citronellal	lb.	2.75	3.25
Citronellol	lb.	7.00	7.25
Citronellyl Acetate	lb.	—	—
Coumarin	lb.	2.75	3.25
Diphenyl oxide	lb.	.43	.50
Eucalyptol, U.S.P.	lb.	2.00	2.50
Eugenol, U.S.P.	lb.	2.75	2.80
Geraniol, Soap	lb.	1.10	1.50
Other grades	lb.	1.50	3.50
Geranyl Acetate	lb.	—	—
Heliotropin	lb.	5.25	Nom.
Hydroxycitronellal	lb.	8.00	9.00
Indol, C. P.	lb.	28.00	30.00
Ionone	lb.	2.75	3.95
Isoborneol	lb.	.81	.90
Iso-bornyl acetate	lb.	.80	.95
Iso-Eugenol	lb.	—	—
Linolool	lb.	6.75	7.00
Linalyl Acetate	lb.	5.50	7.25
Menthol, natural	lb.	—	13.50
Synthetic, U.S.P.	lb.	13.00	—
Methyl Acetophenone	lb.	—	—
Anthranilate	lb.	2.20	2.35
Paracresol	lb.	—	—
Salicylate, U.S.P.	lb.	.35	.40
Musk Ambrette	lb.	4.00	4.45
Ketone	lb.	4.15	4.60
Xylol	lb.	1.40	1.80
Phenylacetaldehyde	lb.	5.00	6.00
Phenylacetic Acid	lb.	1.85	1.90
Phenylethyl Alcohol	lb.	2.10	2.50
Rhodinol	lb.	—	—
Safrol	lb.	2.25	2.45
Terpineol, C.P., drs.	lb.	.40	—
Cans	lb.	.43	—
Terpinyl Acetate, 25 lb. cans	lb.	.87	—
Thymol, U.S.P.	lb.	3.00	Nom.
Vanillin, U.S.P.	lb.	2.35	2.75
Yara Yara	lb.	1.80	1.85

Insecticide Materials

Insect Powder, bbls.	lb.	.29	.30
Pyrethrum Extract			
20 to 1	gal.	5.90	6.00
30 to 1	gal.	8.85	9.00
Derris, powder—4%	lb.	.31	—
Derris, powder—5%	lb.	.35	—
Cube, powder—4%	lb.	.31	—
Cube, powder—5%	lb.	.35	—
Squill, red, dried	lb.	.85	1.00

Waxes

Bees, white	lb.	.61	—
African, bgs.	lb.	.49	—
Refined, yel.	lb.	.59	.60
Candelilla, bgs.	lb.	.38	—
Carnauba, No. 1, yellow	lb.	.88	.89
No. 2, N. C.	lb.	.84	.85
No. 3, Chalky	lb.	.77	.78
Ceresin, yellow	lb.	.13½	.18
Montan Wax, bags	lb.	.45	.46
Paraffin, ref., 125-130	lb.	.0520	.0560

QUALITY INSURANCE

TODAY Fat and Oil processors are taking out a new type of insurance . . . NUCHAR Active Carbon Insurance . . . because the use of a small amount assures maximum stability of color and odor.

Although active carbon has long been used to remove color and odor from oils to be used for soap, only recently has it been recognized that undesirable colorless impurities such as peroxides and pro-oxidants are also removed by this treatment. Soaps made from stable oils have less tendency to spot, chip or become discolored.

Write for a generous sample of NUCHAR Active Carbon so that you can run your own tests and see for yourself the improvement in color, odor, and stability of the finished soap.

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PRODUCTION

A section of SOAP devoted to the technology of oils, fats, and soaps published prior to Jan. 1, 1932, as a separate magazine under the title, Oil & Fat Industries

Tall Oil Recovery

IN the Kraft process of making paper pulp, any non-volatile or acidic matter remains in the black liquor left from digestion of the wood in alkaline sodium sulfide solution. The concentration of sodium salts present is sufficient to salt out any soap-like material, so that crude liquid rosin soap floats in the black liquor, from which it may be separated entirely. The by-product has particular advantages and is badly needed for many war industries.

The proper technique of recovery is almost identical with the fitting process of the soap-boiling art. The crude tall-oil soap separated is transferred to a vat fitted with open and closed steam pipes. The black liquor from the sulfate process contains a very considerable quantity of water-insoluble, alkali soluble lignins which are precipitated in solid form on the addition of acids. It is vitally important in the production of tall oil that black liquor remaining entangled in the tall-oil soap be removed before any attempt at acidification takes place. Failure to do this results in the precipitation of a very fine, almost gelatinous precipitate from the black liquor which causes the formation of intractable emulsions and renders the separation of clean tall oil an expensive and tedious process.

Therefore the soap is settled hot and all black liquor possible is run off. The soap remaining in the pan is closed by blowing in open steam and thus adding water. Sodium sulfate is added in sufficient quantity to salt out the soap again, and the whole settled, the solution of sodium sulfate and residual black liquor being again run off the bottom for as complete removal as possible. In many cases this operation is repeated as the sodium sulfate afterwards enters the Kraft process and is utilized. In some of the more up-to-date plants a final wash is given with sodium chloride and this last wash discarded. Sodium chloride is much more effective in salting out than sodium sulfate, but is necessarily wasted as it cannot be put into the mill circuit. Sodium hypochlorite has been advocated at this stage to oxidize any sulfides.

A thoroughly clean soap now remains in the vat, free from black liquor, ready for acidification. Mill practice in this varies. The ideal practice is to add sufficient hot water to render the soap liquid, when it is strained through metal screens or filtercloth to remove all suspended matter before acidification. The whole aim of the fitting and of filtration is to reduce the possibility of emulsification in the acidification vats.

This latter vat is usually lead-lined and fitted with open and closed steam coils, preferably acid-proof. A compressed-air agitation coil is advantageous. Acidification is carried out at the boiling point, 30-50 per cent sulfuric acid being commonly used. The theoretical quantity of acid is added, estimated by simple titration of a sample of the vat contents. Agitation must be thorough. Acidification of this soap under these conditions without very violent agitation invariably leaves some undecomposed soap remaining dissolved in the separated tall oil. It is important not to add more sulfuric acid than necessary owing to the possibility of damage to the plant and difficult disposal of effluent. Intensive mixing sometimes leads to the formation of emulsions, so that this stage of treatment is the most difficult. When the foregoing procedure of washing has been carried out, danger of emulsion formation does not exist. Acidity should be controlled by spot testing the aqueous solution with methyl orange after thorough agitation. Violent agitation at this point is essential, and additional acid is added until the liquid shows a permanent pH value of less than 6. The tall oils will then be free from soap. The acidified mixture is allowed to settle hot and the aqueous solution drawn off.

Under proper conditions the clear settled tall oil will be substantially free from moisture and can be run off into containers, any small quantity of emulsion being discarded and used up in the next bath. When rea-

sonable care is taken and strict control insisted on, the operation is almost trouble-free and can be carried out at a very low cost.

With the exception of certain definitely limited specific uses, steam-distilled tall oil comes into competition with the ordinary vegetable and animal fatty acids,—and the solid resinous acids with colophony. Of the various substances contained in tall oil it would appear to be quite definite that the proportion of fatty acids to resin acids is fixed by the raw material and cannot be altered by the process. The unsaponifiable matter would appear to be capable of some reduction by increasing the amount of steam discharge from the cookers and thus removing more volatile matter. The water content is merely a question of proper settling, which also applies to the sodium sulfate content, while the soap content is controllable completely in the process of production. Well prepared U. S. tall oil contains about 0.1 per cent of sulfated ash, 1.2 moisture and volatile matter, 8.2 unsaponifiable matter, 90.4 saponifiable fatty matter, 52 fatty acids, 38.4 resin acids, with an acid value of 163 and a saponification value of 173. Finnish and Swedish products vary somewhat from these values. Karl B. Edwards. *Chemistry and Industry* 61, 233-5 (1942).

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Tests on Washing Agents

The effects of two washing agents on cotton, linen, cotton-spun rayon mixtures and spun rayon were tested. One, called "Melsite," contained Na_2O, SiO_2, $9H_2O$, other alkalies and a wetting agent. A washing soda contained soda ash, waterglass, fatty acids and a wetting agent. Changes in the tensile strength of cotton and mixed fabrics from use of the metasilicate agent or the waterglass-containing washing soda were very slight. Such changes with linen were within the limits prescribed by government standards. Pure spun rayon fabrics behaved like linen.

The ignition residues were always very low. No silica was present in the ash, which was evidence against the assumption of the adsorption of hydrolytically split-off silica by the fiber. Deposition of silica on the fiber occurred only when hard water was used and the laundering was improperly done, that it with inefficient rinsing.

According to government standards (German) the whiteness must amount to 70 per cent after 50 washings. Only with spun rayon, which as new fabric had a whiteness of 72.4 per cent, did the experimental pieces show a whiteness of only 70.8-71.4 per cent. The whiteness was higher for all other fabrics.

It is concluded that, when metasilicate or waterglass - containing washing soda are used, bleaching is either unnecessary, or very little is required. Silicates are therefore harmless as washing agents and show a good detergent action for all types of fibers tested. No injury to the fiber results from hydrolytically split-off alkali. When silicates and silicate-containing washing soda are used, soft water must be used and the concentration must be carefully controlled. Time and temperature fall within limits permissible for the usual washing methods. Bruno Walther. *Deut. Waschcrei-Forsch. Ber.* 7, 92-6, 98-9, 107-13, 121-7; through *Chem. Abs.*

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Bath Oils

Sulfonated oils are often used to form the base of these popular preparations. One of the main requirements is that they diffuse evenly and without separation of oil. A simple product contains 75 parts of sulfonated castor oil and 25 parts of perfume compound, to which may be added a suitable wetting agent. The sulfonated oil may be replaced by glycol or its esters, as in a product containing 90 per cent of diethylene glycol monoethyl ether, and 10 per cent of perfume compound.

Triethanolamine soaps, especially triethanolamine stearate, are good emulsifying agents. A suggested formula is 10 parts of perfume compound, 10 white oil, 12 triethanolamine stearate, and 100 parts of water. The soap is dissolved in the white oil with gentle heating. Perfume is added and the mixture warmed to 62° C. with stirring. This is then stirred into the water, also warmed to 62° C.

Perfume combinations vary but pine odors are favorites by far. They should be of such a nature as to give a strong and pleasant effect in the bath water. Some perfume ingredients change their odor and are not suitable for this purpose.

Milk bath preparations consist of an oil-in-water emulsion such as may be produced with triethanolamine, stearic acid, high-strength sulfonated castor oil, and an addition of glycerine or diethylene glycol. Lanolin, fatty alcohols and their sulfates, sodium cholate, glycerine monostearate, and triethanolamine oleate are also suitable bases. *Am. Perfumer* 44, No. 6, 37 (1942).

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Separating Wool Fat

Wool fat can be very easily separated from wool-washing liquids by means of ionizable substances, the cation of which forms with the anion of the sulfuric ester salt a compound which is insoluble or slightly soluble in water. The washing liquids usually contain the wool fat in dispersed form, the sulfuric ester salts acting as dispersing agents. Examples of the ionizable compounds are salts of aluminum, trivalent iron, thorium, tin, lead, and quaternary ammonium compounds such as those of the type of quaternary pyridinium compounds. N. V. de Bataafsche Petroleum Maatschappij. British Patent No. 538,899.

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Nickel Catalyst

In the Slavyanskii hydrogenation plant there is added to the catalyst prepared from nickel bicarbonate approximately 26 per cent of the less expensive nickel catalyst obtained by treating nickel sulfate solution with sodium bicarbonate. Nickel carbonate is precipitated at 40° C., mixed for 3-4 hours, filtered, the precipitate washed and dried at 60-70° C. in a drying oven. The dry, ground nickel carbonate powder is placed in a vessel with oil and the reduction carried out with hydrogen at 245-50° C. for 3-4 hours. I. I. Sorokin, N. A. Ivanova and E. M. Mal'tseva. *Khim. Referat. Zhur.* 1940, No. 4, 109-10; through *Chem. Abs.*

Removing Soap Dust

IN general, comminuted soaps are made by spray-drying the liquid soap stock to obtain particles in granular form. The dried soap particles are classified within designated limits of size by a screening operation and packed. Commercial grades of comminuted soap ordinarily range in particle size between those particles passing a 20-mesh screen and retained by an 80-mesh screen, the oversized particles and fines being returned for reprocessing. However, soap fines and dust occur in the packed product, with present screening methods, to the extent of 5-30 per cent of the total package.

This undesirable effect is also particularly apparent in the manufacturing process, requiring the use of dust masks by workmen, and involving an unavoidable waste of soap by entrainment of fine particles in the air. It has been discovered that a comminuted soap containing in the bulk only those particles retained by a 140-mesh screen is not objectionable from the point of view of causing nasal irritation, but collection of soap dust of such fineness is not satisfactorily accomplished during the screening operation due to a tendency of the bulk soap to retain a portion of the dust, and the tendency of microscopic particles to entrain in the air upon agitation.

In a new invention, a method of removing soap dust consists of conducting the soap particles in a continuous flow over a confined path, providing successive intervals of free gravitational fall of the particles to form successive curtains of falling particles. Air is passed counter to the particle flow and through these curtains, so that dust present in the particle mass is entrained in the air current. This dust-laden air is then separated from the soap particles. Lever Brothers & Unilever Ltd. British Patent Specification 10,233.

Factory vs. Home Laundering

Standard cotton test bundles were washed 100 times in a domestic process using various types of domestic mechanical equipment, and in a controlled commercial process. By a statistical analysis of the data it was found that in the washing of cotton: for soil removal the commercial process is superior to all domestic processes; for tensile-strength loss, the commercial process compares favorably with the domestic processes in which samples were dried outdoors, but loss in strength is greater in the commercially washed samples than in those washed domestically and dried indoors. Chemcal degradation is least when clothes are dried indoors as in the commercial method, and in the domestic process using indoor drying.

The gyrator and vacuum cup gave similar results for degradation and tensile-strength loss. The detergent efficiency of the gyrator in most cases was slightly superior to the vacuum cup.

The wringer aids materially in soil removal and is superior in this respect to the spinner extractor. From the standpoint of wear, indoor drying is preferable to outdoor, but for whiteness retention outdoor drying is preferable. Elizabeth Lovell, Jessie Roberts and Jessie Brodie. *Am. Dyestuff Reporter* 31, 301-6, 324 (1942).

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Solubility Studies with Soap

The solubility of sodium palmitate, selected as a typical soap, in organic liquids, is of interest in commercial applications in the manufacture of soap, shaving preparations, shampoos, special detergent solutions, and numerous other materials, since in all of these products a soap is dissolved or dispersed in one or more organic liquids.

Solubility curves were determined for sodium palmitate in glycerol, diethylene glycol, palmitic acid, isopropyl, ethyl, *n*-heptyl, and *n*-cetyl alcohols, *ortho-*, *meta-* and *para-*cresols, *n*-heptane, *n*-cetane, and "Nujol," up to nearly the melting point of the soap. The appearance of the phases above and below the curves is described. Parts of the solubility curves were obtained for sodium palmitate in acetic acid, ethyl acetate, acetamide, and *n*-butylamine. With carbon tetrachloride and 1-nitropropane rapid reaction occurred above 100° C.

Above the melting point of the soap there is complete miscibility except where superneat soap is formed, and even in these cases complete miscibility is attained at slightly higher temperatures. Where the temperature and concentration are both high, the solubility on a weight per cent basis is very similar in all solvents. In more dilute systems the differences between solvents becomes apparent, it being evident that in general higher temperatures are required to attain a given solubility, the less polar the solvent. Numerical values are tabulated for the effective polarity of the various liquids used as solvents. The solubility behavior of potassium oleate in ethyl alcohol is qualitatively similar to that of sodium palmitate.

The colloidal nature of these systems is indicated by the formation of gels and liquid crystal phases and by the appearance of sharp elbows in the curves, often attributed to the formation of micelles. C. W. Leggett Jr., R. D. Vold and J. W. McBain. *J. Phys. Chem.* 46, 429-40 (1942).

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Mobile Laundries

As a result of cooperation between the soap manufacturers in Great Britain, a National Emergency Washing Service has been organized by the Ministry of Health to serve districts whose water supplies and heating facilities have been interrupted by air raids. The soap firms have given the mobile laundries to the government, and eventually 18 will be in operation. Each van is staffed by four girls especially trained for the work. People who bring their laundry to the van in the morning can collect it in the afternoon. Smaller vans can handle the work of about 40 families a day, while the larger ones can do the work for 80. *Laundry & Dry Cleaning J. of Canada* 22, No. 6, 22 (1942).

Water Softener Test

A SIMPLE test for determining the comparative efficiency of water softening chemicals used in institutional laundries has been suggested by Edward R. Williams of Creative Chemical Co., Pittsburgh. This company manufactures a concentrated water softener for sale to laundries and to bottlers for retail sale. Adopting volume of water as a working basis, it is assumed one quart of a 10 per cent aqueous solution of water softening chemical should prove an equitable volume and strength of solution for 55 to 60 gallons of water used in a break or suds operation in laundering processes. One quart of such a solution added to 55 gallons of water would be a dosage of one part concentrated chemical in 2,200 parts water; one quart in 60 gallons of water would be one part chemical in 2,400 parts water.

Taking a flint glass bottle larger than quart size to allow for making suds by shaking, one quart of water is added. It is of average hardness, containing six or seven grains of calcium per gallon. Next one grain of relatively pure soap is added in powdered or small grain form for quick dissolving. Then the bottle is shaken to form the maximum volume of suds, and by inverting the bottle the suds are measured on the outside. This test is repeated with another quart sized bottle but with only half the amount of soap. However, 4.4 c.c.'s of a 10 per cent aqueous solution of water softener is added. Again the bottle is shaken until all the soap grains are dissolved. The bottle is inverted and the suds measured. If the suds volume in the second bottle is not equal to that in the first bottle, where half the amount of soap was used, soap grains are added to the second bottle until the amount of suds in the bottles is equal. By comparing the amounts of soap, used the result will show how much soap was saved in the second operation.

Similarly, one bottle may be used. One grain of soap is added to the quart of water and the whole mixture shaken to form suds. The suds amount is then recorded. Next the chemical water softener is added and the bottle again shaken. The depth of suds is measured and recorded. By comparing the two figures it is possible to arrive at the amount of soap saved by using the chemical water softener.

Using this test and substituting other water softeners, relative efficiency in maintaining stable and adequate soil-removing suds for laundering processes and their efficiency in soap saving can be measured. Verification of laboratory analyses may be made by actual washroom practice. Here, test bundles of clothes in 50 complete washing operations may be compared by use in different wash wheels with competitive solutions. The results of these tests may then be used as a basis for specifications for buying water softening and akalinity reagents.

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Reclaiming Cleaning Fluids

Suspended impurities are separated from a spent emulsion-type petroleum-naphtha cleaning fluid consisting of petroleum naphtha and an alkaline solution distributed one within the other by an emulsifying agent such as soap, by treating with isopropyl alcohol. The alcoholic vapor is passed into the heated impure cleaning fluid. This causes separation of a supernatant layer of petroleum naphtha. Below are layers of impurities and iso propyl alcohol. Colin C. Jones, to Chemical Reclaiming Sales Co. U. S. Patent No. 2,270,837.

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pH of Washing Liquors

By means of comparative calculations based on tables and curves, formulas are derived to give the pH from expressions of the concentration of a given alkaline salt in grams per liter and mols per liter. For pH values above 11.5, the temperature coefficient —0.0024 should be used. For an increase in temperature from 16 to 85° C. the p(OH) decreases considerably; it changes little with changes in concentration. With silicates, especially the metasilicate, the difference produced by changes in concentration is appreciably greater, although there is no notable change for variation in p(OH). It is provisionally concluded that the p(OH) is not directly concerned in determining the detergent action. A. C. Schuffelen and L. J. N. van der Hulst. *Chem. Weekblad* 38, 231-4; through *Chem. Abs.*

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Neutralization of Fats

For the production of neutral fats and oils, rapid removal of the water formed by the reaction of neutralization is recommended. This may be done by heating, evacuation, or removal with a current of neutral gas. For example, 50.8 kg. of coconut oil and 10.2 kg. of free fatty acid in an earthenware crucible are heated slightly with steam coils, and mixed with 3 kg. of monoglycerides from coconut-oil fatty acids. The mixture is then heated to 250° C. This temperature should be maintained for 3 hours during which air and water vapor are removed by a stream of carbon dioxide. The amount of fatty acids is reduced in this way to 2 per cent, the oil obtained being suitable for working up further. Ludvik Spirk. *Chem. Listy* 35, 45.

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Grading Vegetable Oils

Continued research on methods of grading vegetable oils for trading purposes will be necessary if the future interests of the industry are to be served to the best advantage. Possibly bleach colors rather than refined oil colors should be made the basis for settlement. A. E. Bailey, R. O. Feuge, and W. G. Bickford. *Oil & Soap* 19, 97-102 (1942).

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Metal Tube Linings

Protective linings for metal collapsible tubes for shaving creams are made of an alkyl cellulose such as ethyl cellulose with an admixture of not over 3 per cent of its weight of a sebacic ester of a polyhydric alcohol such as glycol sebacate. Walter Hestermann, to White Metal Mfg. Co. U. S. Patent No. 2,270,845.

PRODUCTS

Glossy Soap Cakes

A continuous process for uniformly imparting gloss to tablets of toilet soap consists in passing the tablet through steaming and drying zones of a suitable apparatus. Lever Brothers & Unilever Ltd. and Thomas Penny. British Patent No. 538,675.

New Soap Process

A process and apparatus are described for producing soap which involves forming a body of molten, anhydrous alkali in a closed chamber out of contact with the atmosphere, and gradually introducing saponifiable materials into this molten alkali until molten anhydrous neutral soap is formed. The resulting soap is cooled before being brought into contact with the atmosphere, to avoid pyrolytic decomposition. Benjamin H. Thurman, to Refining, Inc. U. S. Patent No. 2,271,406.

Alkylol Amide Derivatives

Water-soluble derivatives of alkylol amides are obtained by sulfating or sulfonating a boric acid ester of an alkylol amide containing at least 12 carbon atoms and derived from a fatty acid. The resulting compounds may be neutralized with either an organic or inorganic basic substance. The water-soluble compounds obtained have excellent wetting, detergent and softening properties and may be used in textile and allied industries. Jacob Katz. British Patent No. 538,859.

Buffering of Hypochlorite

Hypochlorite, both as solutions of sodium hypochlorite and solutions of bleaching powder, serves as a bleach for many purposes, sometimes in acid solution but more often in alkaline. Unless such a solution is buffered, the pH changes rather rapidly as the available chlorine is consumed. For example in the bleaching of linen yarn with a concentration at the start of 4.8 grams per liter and a pH of 11.0, after 30 minutes these values have been found to change to 2.6 grams of chlorine per liter and a pH of 8.4 Similarly in the acid bleaching of bast fiber yarns with a concentration of five grams of chlorine per liter at the start and a pH of 6, these values changed to 2.7 grams of chlorine per liter after one hour, and a pH of 3.4.

Suitable buffer agents for use with hypochlorite are discussed, and the relative change in pH in the presence of these buffers is recorded. The amount of buffer required varies somewhat with the individual agent. B. P. Ridge and A. H. Little. *J. Textile Institute* 33, T59-74 (1942).

Calcium Soap Emulsifier

Formyl-*alpha*-undecylbenzylamine is sulfonated. The sulfonic acid forms as a sodium salt a light colored powder, which is easily soluble in water and whose aqueous solution foams strongly. The compound is applicable as a washing agent and as a calcium-soap emulsifier. J. R. Geigy A.-G. Swiss Patent No. 211,780.

Use of Cation-active Agent

Cetyl trimethyl ammonium bromide, a cation-active synthetic detergent, has distinct bactericidal properties. Its use is indicated as a substitute for the soap-and-water technique for treating dirty wounds, as it is painless when applied to raw skin surfaces. *Manufacturing Chemist* 13, No. 5, 117 (1942).

Glycerine Recovery

Glycerine is recovered from an aqueous glycerine-containing solution by treating the solution with a substantially water-immiscible combination of solvents to extract the glycerine. One of the solvents is an organic compound of the class of alcohols of higher molecular weight than ethyl alcohol, ethers and esters, the compound being a solvent for glycerine. Another solvent in the combination is an organic compound immiscible with water of the class of alcohols of higher molecular weight than ethyl alcohol, ethers and esters, and at the same time a solvent for the first solvent. Nathan M. Mnookin, to Speas Development Co. Canadian Patent No. 405,685.

Shaving Lather Holder

A pliant, one-piece, cup-shaped bowl is designed in which to mix a shaving preparation. The receptacle has an aperture adapted to enclose the outlet end of a collapsible tube. A hollow supporting base is intended to enclose partially the body of the collapsible tube. Joseph W. Hustler. Canadian Patent No. 405,404.

Shaving Soap

A shaving material comprises the reaction product of a metal compound upon fatty acids melting above 56° C. and a reaction product of metal compounds upon casein, in addition to glycerine and menthol. In contrast to former materials, this solid shaving material contains no powder-type mineral components. There can be added as binders starch soluble in glycerine or water, gum arabic or tragacanth. Inka-Vertrieb Giorgini. Swiss Patent No. 211,383.

Wetting Agents

Waste aqueous liquor obtained in the sulfate process of manufacturing paper pulp is freed from tall-oil soaps and clarified, then treated with sufficient mineral acid or an acid-reacting salt of a mineral acid to neutralize the alkalinity and produce a brown precipitate. The latter is then separated from the liquor for use as a wetting agent. Karl B. Edwards. British Patent No. 538,581.

Radiator Cleaner

A composition for cleaning radiators contains effective amounts of an alkali-metal hexametaphosphate and a water-soluble alkali. Ralph E. Hall, to Hall Laboratories Inc. Canadian Patent No. 405,802.

Soap for Spray Cleaning

A composition suitable for use in spray cleaning is formed containing an alkali-metal soap together with a substantial amount of the gums recovered from crude vegetable oils, also a substantial amount of an alkaline salt. Benjamin H. Thurman, to Refining, Inc. U. S. Patent No. 2,271,407.

Glossy Soap Flakes

The gloss and transparency of soap flakes are enhanced by passing the flakes through a zone in which they are exposed freely but briefly to the action of steam, and then passing them through a drying zone in such manner that they are kept substantially separate from each other until their surface has become sufficiently dry to prevent them from sticking together. Lever Brothers & Unilever Ltd. and Thomas Penny. British Patent No. 538,934.

Quaternary Nitrogen Compound

Octadecylaniline is ethylated by means of diethyl sulfate. The resulting quaternary ammonium compound, octadecyl diethylaniline ethyl sulfate, a wax-like, light yellow paste is soluble in water to give a clear solution. It can be used as a dispersing and emulsifying agent, and is also suitable for the protection of fibrous materials against moth and other pests. J. R. Geigy A.-G. Swiss Patent No. 211,790.

Analysis of Sulfate Powders

Shampoos and other washing powders often contain alkali sulfates together with a sulfate of a higher alcohol or a sulfonate of a fixed oil. Satisfactory results in analyzing such products were obtained as follows: (1) Ash the powder with excess soda ash and determine total sulfur as sulfate, SO_3, in the ash. (2) Weigh 0.5-1 gram of sample into a small mortar, grind with 2-5 cc. of cold saturated brine free from sulfate, decant and filter the liquid. Repeat the process five times. Rinse the pestle and mortar three times with the same amounts of brine, filtering the liquid, and wash the filter paper. Make up the filtrates and washings to a known volume and determine the alkali sulfate in the solution. The difference between the results in (1) and (2) gives the amount of sulfur in the alcohol sulfate or sulfonated oil. S. Ram. *Analyst* 67, 162 (1942).

Autoxidation Products

Tests are described for detecting *alpha*-dicarbonyl compounds in autoxidized fats. The tests are based on conversion of the *alpha*-dicarbonyl compounds to their dioximes, formation of the nickelous, cupric and bis-pyridine-ferrous derivatives of the dioximes, and extraction of these colored metallic dioxime derivatives into organic-solvent phases. The presence of *alpha*-dicarbonyl compounds in a number of autoxidized fatty materials has been demonstrated. Peroxides in autoxidized fatty materials can be destroyed by treatment with ferrous chloride without destruction of *alpha*-dicarbonyl compounds. Edward A. Prill. *Oil & Soap* 19, 107-9 (1942).

Soap Fibers

X-ray researches have shown that the molecules of soap fibers lie transverse to the fiber axis and are not linked together by anything more than "crystal" forces, whereas in all other natural and synthetic fibers the macromolecules lie along the fiber axis. Orientation of micelles in the fiber can also be revealed by x-ray diffraction photographs. A correlation is sought between the orientation revealed by x-ray methods and that shown by the photographing of soap fibers by the electron microscope. The electron microscope proves to be a powerful instrument for the detection of selective orientation. Sydney Ross. *J. Phys. Chem.* 46, 414-7 (1942).

Peat Acid Oils

Use of peat acid oils in the manufacture of antiseptics and disinfectants is described. Peat phenols and lysols prepared from them are equal to pure phenols and medicinal lysols in their bactericidal properties. Creolins with a lower content of phenols can be used in agriculture against plant pests. K. I. Rivkina. *Khim. Referat. Zhur.* 1940, No. 4, 83.

New Tallow Specifications

The United States Bureau of Standards has just issued its Federal Specifications for Tallow under the number C-T-91 and dated April 29, 1942. The specification was approved on the above date by the Director of Procurement for the use of all departments of the Government and shall become effective not later than October 15, 1942. It may be put into effect, however, at an earlier date.

The specification covers one type and one grade of tallow. The material shall be refined tallow from the fat of animals. Unless otherwise specified, tallow of the beef variety, the mutton variety or a mixture thereof is acceptable. It shall be free from rancidity, dirt, blood, and admixture of other materials. The following specific requirements also apply: ash, maximum of 0.2 per cent by weight; unsaponifiable matter, maximum of 1.0; water, maximum 1.5; neutralization number, 4.0; and melting point, minimum of 41° C. Copies of the specification are on sale at the office of the Superintendent of Documents, Washington, D. C., for five cents.

Recovery of Catalyst

Filtering nickel bicarbonate through a filter press filled with kieselguhr or with powdered nickel carbonate removes nickel completely. The method makes filtering easy and improves the color of the fat. For repeated reuse of the filtered catalyst, filter the fat mass at a temperature not higher than 120° C., separate the part of the catalyst contaminated with hydrogen sulfide, or impurities from the hydrogenation of low-grade fats; prevent the contamination of the used catalyst by foreign impurities; repeat the grinding of the catalyst to increase its active surface. E. Ha. Etinburg and P. A. Artamonov. *Khim. Referat. Zhur.* 1940, No. 4, 109; through *Chem. Abs.*

New Laundry Sour

A new laundry sour has been announced by H. H. Milligan Co., St. Louis. The product, called "Sanitex," is said to be odorless, a good neutralizer, and germicide.

EQUIPMENT AND BULLETINS

IF YOU want additional information on any of the items described below or if you want any of the bulletins, catalogs, etc., write to the MacNair-Dorland Co., Inc., 254 West 31st St., New York. mentioning the number of the item.

892—MM&R Book Lists Oils

A comprehensive book listing and describing all the essential oils grown and distilled in the United States will be issued shortly by Magnus, Mabee & Reynard, Inc., essential oil dealers, New York. The preface of the manual is devoted to a message advocating that American industry make itself as free from foreign sources of supply as possible. Copies of the book, entitled "Essential Oils and Kindred Products Grown and Distilled in the U. S. A." may be obtained by writing to Magnus, Mabee & Reynard, Inc., 16 Desbrosses St., New York, or to the company's Chicago office, 221 North La Salle St.

893—New Monsanto Book

Monsanto Chemical Co., St. Louis, has just brought out its new, 170 page, 26th edition of "Monsanto Chemicals." It was necessary to triple the number and size of pages over the last edition. Copies are available by writing to Robert L. Taylor, chemicals advertising manager.

894—Baird & McGuire Booklet

Baird & McGuire, Inc., St. Louis, have just issued a 20 page booklet, "Synthetic Phenol Germicides." It describes the characteristics of these new disinfectants and antiseptics, methods of use, and contains chemical and biological information, toxicity figures, etc. Copies may be had on request by writing Baird & McGuire at St. Louis, Mo., or Holbrook, Mass.

895—Iowa Rat Bulletin

Iowa Agricultural Experiment Station, Ames, Ia., has issued a bulletin, discussing the rat, its economic importance and means for its control. Poison baits, fumigation and traps are considered, along with methods of ratproofing farm buildings. Bearing the title "Rat Control," the publication is designated as Iowa Station Bulletin p. 33.

896—Folder on Floors

Theo. B. Robertson Products Co., Inc., Chicago, has issued a folder entitled "Are Your Floors As Beautiful As They Should Be?" Safe, scientific, easy and economical ways to clean floors so that their beauty and life may be preserved are discussed and recommendations offered for use of the company's vegetable oil soaps, floor seals and wax.

897—Booklet on Cleaning

Magnuson Products Co., Brooklyn, is distributing a booklet on "Cleaners and Detergents," which discusses the efficient handling of cleaning problems in hospitals, hotels, restaurants and other institutions. Suggestions are given for use of the company's "Permag" cleaning compounds for general cleaning, dishwashing and other applications.

Chicagoans To Golf

The fifth in a series of monthly golf tournaments of the Chicago Drug & Chemical Association and the Chicago Perfumery Soap & Extract Association will be held at the Evanston Country Club on Tuesday, September 22. The fourth tournament took place at the Tam O'Shanter Country Club on August 6.

Domestic Vegetable Fats

One of the first practical moves in the oil and fat supply situation is a sizable increase in domestic soybean and peanut acreages for 1942. At a price soybean oil can be converted into almost any type of fat desired by the soap maker. Soybean oil may be hydrogenated to produce a good substitute for beef tallow in the manufacture of hard soaps. The same is true of peanut oil—again, at a price. W. J. Murphy. *Chem. Industries* 50, 773 (1942).

P & G Declares Dividend

Procter & Gamble Co., Cincinnati, has declared the regular quarterly dividend of 50 cents a share on common stock, payable August 15 to stockholders of record July 24.

Bubble Bath Products

(*From Page* 28)

water left, and warm water run into the tub with the greatest possible force. Stirring aids foam formation.

Small capsules of compressed air or compressed oxygen have been sold with foam baths, the capsule being opened under water, releasing a stream of bubbles which aid in the production of foam from the agents present. These probably never went much beyond the trial stage, as effective foam producers can be made without the necessity of such mechanical aids.

Containers

LIQUID would naturally be packed in glass; powders could also,—a colored product then showing off to greater advantage. When a fairly expensive container seems justified, it often offers greater appeal if it is so designed that it can serve another purpose after the contents have been used, such as an attractive wooden or plastic box or jar. Powders and tablets are easily packed in paper and cardboard, but even then eye appeal should not be overlooked in such luxury items. In products where hygroscopicity is a menace, the container should be airtight and should be kept in a dry place, perhaps a caution to this effect on the label being advisable.

These products offer such a variety of possibilities in compounding that they are a challenge to the imagination of those who wish to work with them. The above is intended to be suggestive and to show in what direction the best possibilities lie.

PATENTS

Conducted by

Lancaster, Allwine & Rommel

Registered Attorneys

PATENT AND TRADE-MARK CAUSES

402 Bowen Building, Washington, D. C.

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 25c for each copy desired to Lancaster, Allwine and Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,285,184, Pest Control, patented June 2, 1942 by Euclid W. Bousquet, Wilmington, and Hubert G. Guy, assignors to E. I. du Pont de Nemours & Co., Wilmington, Del. An insect control composition containing as an essential active ingredient a 2-alkenyl thiocarbamide of an amine selected from the class consisting of aromatic and cycloaliphatic amines.

No. 2,285,299, Purification of Caustic, patented June 2, 1942 by Irving E. Muskat and Fred D. Ayres, Akron, Ohio, assignors to Pittsburgh Plate Glass Co. A process of purifying an aqueous solution of an alkali metal hydroxide, containing a substantial amount of silica as an impurity, which comprises adding ammonia to the solution in an amount sufficient to cause precipitation of silica therefrom but insufficient to cause separation of two liquid phases, maintaining the temperature such that precipitation of a substantial portion of solid hydroxide does not occur, removing the precipitated silica from the solution and separating the ammonia from the purified solution.

No. 2,285, 300, Concentration of Caustic, patented June 2, 1942 by Irving E. Muskat, Akron, Ohio, assignor to Pittsburgh Plate Glass Co. The method of preparing concentrated sodium hydroxide which comprises treating a solution containing not substantially less than 40 per cent of sodium hydroxide with a substantial amount of ammonia in such concentration that a separation of liquid phases does not occur and maintaining the temperature such that a solid hydrate of concentration higher than that of the solution is precipitated.

No. 2,285,409, Pest Control, patented June 9, 1942 by Euclid W. Bosquet and Ellsworth K. Ellingboe, Wilmington, and Hubert G. Guy, assignors to E. I. du Pont de Nemours & Co., Wilmington, Del. A pest control composition containing as an essential active ingredient a 1, 2, 4-dithiazole.

No. 2,285,410, Pest Control, patented June 9, 1942 by Euclid W. Bosquet, Wilmington, and Hubert G. Guy, assignors to E. I. du Pont de Nemours & Co., Wilmington, Del. A pest control composition containing as an essential active ingredient a 1, 2, 4-dithiadiazole.

No. 2,285,676, Detergent Composition, patented June 9, 1942 by Max Metziger and Alfred Long, Joliet. Ill., assignors to Blockson Chemical Co., Joliet, Ill. An alkaline composition for forming cleaning baths for metal-ware with tin surfaces comprising as the essential cleaning constituent a non-caustic alkaline detergent, less than 4 per cent of a chromate salt of alkali metal, and an alkali metal silicofluoride up to about 15 per cent.

No. 2,285,950, Method of Applying Insecticides, patented June 9, 1942 by William N. Sullivan, Washington, D. C., and Lyle D. Goodhue, Berwyn, Md.; dedicated to the free use of the People in the Territory of the United States. A method of dispersing rotenone, rotenone bearing resins, compounds related to rotenone and the resin from which the rotenone has been removed, which consists in depositing a solution of any of these insecticides onto a surface heated at a temperature between 300° C.-500° C., thereby releasing the insecticides in the form of a smoke.

No. 2,286,222, Insecticidal Composition, patented June 16, 1942 by Clarence L. Moyle and Fred W. Fletcher, assignors to The Dow Chemical Co., Midland, Mich. An insecticidal composition an organic thiocyanate and a synthetic ether compound having the formula:

$$R—(O—C_nH_{2n})_m—X$$

wherein R represents an aromatic radical, $_n$ is an integer from 2 to 6, inclusive, $_m$ is an integer not greater than 4, and X is selected from the group consisting of chlorine, bromine, iodine, and the hydroxyl radical.

No. 2,287,235, Pest Control, patented June 23, 1942 by Robert B. Flint and Frank H. Kaufert, assignors to E. I. du Pont de Nemours & Co., Wilmington, Del. A pest control composition useful for controlling fungi, insects, bacteria and like organisms which contains as an active ingredient a cupric chelate of an ortho-carbonyl phenol in which the carbonyl substituent is selected from the class consisting of hydrogen and a monovalent aliphatic radical which characterizes the carbonyl group as a carbonyl group of a ketone or ester.

No. 2,287,836, Parasiticide, patented June 30, 1942 by Frank B. Smith and John N. Hansen, assignors to The Dow Chemical Co., Midland, Mich. A parasiticidal composition comprising as a toxic ingredient an amino-acid ester salt of a phenol.

Trade Marks Granted

(*From Page 47*)

396,390. White shoe cleaning fluid. Filed by Consolidated Royal Chemical Corp., Chicago, Feb. 14, 1941. Serial No. 440,645. Published Apr. 28, 1942. Class 4.

396,400. Solvent soap for leather. Filed by C. H. Stone Co., Lynnfield Center, Mass., Oct. 21, 1941. Serial No. 447,989. Published May 5, 1942. Class 4.

396,414. Cleaning compound. Filed by Fred De Liguori, Washington, D. C., Feb. 4, 1942. Serial No. 450,728. Published May 5, 1942. Class 4.

396,419. Household cleanser. Filed by The Great Atlantic & Pacific Tea Co., New York, Feb. 17, 1942. Serial No. 451,035. Published May 5, 1942. Class 4.

Soap Fat Roll-back

(*From Page 29*)

compel soap manufacturers to reduce to a considerable extent their sales activities: couponing, sampling, display work, etc." He went on to point out that " . . . the industry . . . should now concentrate on cooperative research work to find substitutes for cocoanut oil or other oils which are no longer obtainable. They should work along the lines of increased production of oils and fats as they are now doing with the grease collection campaign . . . "

Rancidity Prevention

Oils and fats containing photosensitizing pigments are refined to check the development of rancidity by percolation through a column of finely powdered sugar. The pigments are absorbed in the sugar and removed from the oil or fat. Mayne R. Coe and Mayne R. Coe, Jr., to the people of the U.S.A. for free use. U. S. Patent No. 2,272,964.

Scouring Rayon

In the continuous scouring of rayon, the scouring section is charged at the rate of two pounds of "Metso" granular, a silicate builder, and one pound of low-titer soap per 100 gallons of water. If hard water is used, it is advised to add a polyphosphate as well. The total alkalinity should be kept equivalent to 0.04 per cent Na_2O, the pH above 10.2. With regenerated cellulose rayons a pH above 11 is economical and gives rapid scouring.

More careful control of temperature and concentration is recommended with acetate rayons, especially with fabrics made of bright yarn. Up to two pounds of "Metso" granular and one pound of low-titer soap per 100 gallons of water at 140° F. for not more than 30 minutes, have been used with safety. If surface saponification of acetates is desired a more alkaline silicate, "Metso 99," is recommended. *Rayon Textile Mo.* 23, 369 (1942).

Washing Palm Beach Suits

Palm Beach fabrics should be washed like any article containing wool. Mohair is present in Palm Beach materials and has laundering properties similar to those of wool. Soap should be built with enough alkaline detergent to counteract the acidity of the soiled suits and hold up a heavy suds throughout the suds bath. At no time should the pH of a suds be more than 9.5. Use low-titer soap.

For bleaching dingy or yellowed white suits, sodium perborate should be used. To every 5 gallons of water at 120° F., add 2 heaping tablespoonfuls of sodium perborate, then add some of the ordinary neutral soap stock for quicker penetration into the fabric. The Palm Beach suits should be allowed to soak in this solution for several hours,—overnight if necessary.

They must then be rinsed thoroughly with clear warm water until the fabric is free of all soap and alkali, then soured to a pH of 4.5 with a good soluble safe sour. A 3 per cent volume of hydrogen peroxide may be used. Chlorine bleaches cannot be used because of the mohair present in the fabric. *Laundry & Dry Cleaning J. of Canada* 22, No. 6, 10-11, 22 (1942).

Sterilizing Fabrics

In order to sterilize blankets and bed linens that have been used in infectious cases, these should be washed in the usual way but an addition made to the suds of one pint of soluble cresol compound per 100 pounds of load, or any other phenol disinfectant. This should destroy any germ except the anthrax spore, which requires steam sterilization. *The Laundryman* 8, No. 6, 4 (1942).

Glycerine Alternate

To replace glycerine in many of its applications, Akerite Chemical Works, Chicago, has developed "Akerite," an aqueous, nontoxic liquid derived mainly from corn. It is soluble in alcohol and water and insoluble in petroleum solvents. Like glycerine it is hygroscopic and has a low freezing point. It has already been tried out in the manufacture of printing rollers, paper, leather, cosmetics, shaving cream, textiles, photographic supplies, various inks, etc.

Disinfectant Powders

The British Standards Institution has issued a specification for sanitary or disinfectant powders to form the basis for purchase and sale. In regard to carbolic powder, the minimum Rideal-Walker coefficient is placed at 0.5, with the proviso that a lower coefficient may be specified by agreement between purchaser and vendor where a phenol content of less than 15 per cent is specified in the powder. This latter proviso relates to powders containing phenols absorbed on a neutral base such as chalk or fuller's earth.

In regard to hypochlorite powder, the specification applies to bulk supplies of the material usually known as chloride of lime. This shall have an available chlorine content of at least 30 per cent by weight at the time of dispatch from the works, and not less than 29 per cent three months after such dispatch. *Chem. Trade J. & Chem. Engineer* 110, 580-2 (1942).

Acid Detergent

The use of an acid detergent, "Mikrosan," proved superior to the usual alkaline types in washing milk equipment. F. M. Scales. *Food Industries* 14, No. 4, 51-3, 97 (1942).

Vegetable Oils of Brazil

(*From Page* 22)

the macauba palm might well serve to produce this needed substitute. Apparently the oilseeds crushers of Brazil are just beginning to give this interesting palm some attention. Since there is an important concentration of this palm in a thickly populated state such as Minas Gerais, it would not appear to be a difficult task to induce the farmers of the region to gather the fruits and sell them to oilseeds crushers. On being apprised of this unexploited oil resource of the State of Minas Gerais, officials of the WPB have informally suggested to important oilseeds crushers of the neighboring state of Sao Paulo that they make an effort to develop this unutilized source of palm oil as a substitute for African palm oil and the accompanying high lauric acid oil obtained from the kernels. The Sao Paulo crushers are alway looking for grist for their oil mills and something may result from the suggestion.

The State of Minas Gerais is also a producer of indaya palm kernels. These palm kernels produce an oil similar to babassu. They are not produced in large volume, but such as are produced are crushed in the oil mills of the city of Belo Horizonte. Minas Gerais is also a producer of a considerable quantity of candle nuts (*Aleurites moluccana*). The oil from this nut is more nearly a drying oil rather than a soap oil. The shell of the nut is thick

and hard and, therefore, difficult to crack, as is the case with so many of the oil bearing nuts of Brazil.

BEFORE leaving Belo Horizonte we inspected the Parfumaria Marcolla e Cia, which is the fifth largest soap making plant in Brazil. It is one of the prettiest small soap plants that the writer has ever had the pleasure of inspecting. This plant produces toilet soap exclusively, which is shipped to every state in Brazil. They also make shaving soap, talcum powder and toothpaste. Marcolla make their own boxes, cartons, etc., and also manufacture their own perfumes. One of the perfumes which they have been using is rosewood oil, which perhaps I should have touched upon in discussing the State of Para, as it is produced from the Para rosa tree of that State. This perfume formerly sold at 32 milreis per kilo and at the time of our visit was selling at 200 milreis per kilo ($4.53 per pound). Brazil is not a producer of a wide variety of essential oils. The three principal ones we found being produced were rosewood oil, orange oil (which we saw being manufactured at Campinas in the State of Sao Paulo, where the forty orange oil factories which have sprung up since the stoppage of orange exports have proven a God-send to the orange producers), and a small amount of lemon oil. In addition there is some oil of eucalyptus and oil of lemongrass and possibly one or two others.

Parfumaria Marcolla e Cia is chiefly owned by an 85-year-old lady whose grandson, Vittorio Marcolla, is manager of the plant. Senhora Marcolla was present to greet us and as we prepared to leave she addressed us earnestly, her remarks being to the effect that the United States should do all in its power to keep the war out of Brazil. We assured her that our country would continue to bend its best efforts in that direction but that she must cooperate by saving her soap lyes and recovering the glycerine therefrom so that the United States might have munitions with which to fight the Japanese and Germans. She promised to do so. This little incident is mentioned as illustrative of the innate friendliness of the Brazilians and their confidence in and genuine regard for the people of the United States.

After inspecting the large oil mills of Rio de Janeiro, which work mainly on babassus brought down from Maranhao and Minas Gerais and flaxseed brought up from Rio Grande do Sul, we went on to the State of Sao Paulo. Sao Paulo is the largest oil mill center of Brazil. The mills of this State produce approximately 85,000 tons of vegetable oils per annum, chiefly cotton seed oil. Sao Paulo is the great cotton state of Brazil.

The closest competitor of the State of Sao Paulo in respect to the production of vegetable oils is the State of Ceara, which in years when its oiticica crop is large will produce in excess of fifteen thousand tons of vegetable oil per annum. The cotton seed oil refineries of the State of Sao Paulo have, for the most part, highly modern continuous refining processes, which compare favorably with the best installations in the United States. American capital through the agency of Swift International and Anderson, Clayton has done much to develop the vegetable oil mill business of the State of Sao Paulo. Swift's oil mill and refinery at Campinas is one of the finest I have ever inspected. Industrias Reunidas F. Matarazzo, one of Brazil's largest industrial enterprises, has its principal cottonseed oil refinery in the city of Sao Paulo.

THE last state of Brazil which the Vegetable Oil Mission visited was Rio Grande do Sul. This is the most southerly state of Brazil and borders on Uruguay. This state contains the most important Brazilian meat packing centers, having in the neighborhood of twelve million head of cattle (about 25 per cent of the total for all Brazil). The abattoirs of the state produce approximately eighteen thousand tons of tallow per annum. Considerable of this is used in the soap factories of the state, and the balance moves out for the use of the soap making plants elsewhere in south Brazil. The oil mills of Rio Grande do Sul are mainly located at Porto Alegre. The crushers of Rio Grande do Sul work mainly on flaxseed which is produced in the state. They also crush some peanuts and sunflower seed, likewise locally produced, together with a small amount of castor seed.

This completes the discussion of the vegetable oil possibilities of Brazil. As may be seen, the possibilities of vegetable oil production may be said to have been fully developed only in two instances, in respect to cottonseed oil and oiticica oil production. As respects raw materials for oil mills of other areas of the world, Brazil, under war time conditions, has become the world's chief supplier of castor beans but processes only a relatively small proportion of them in her own mills. Total exports of castor beans in 1941 were two hundred and twenty-two thousand tons. As respects babassu, murumuru and other raw materials for the production of high lauric acid oils, the surface has only been scratched. Capital with which to build roads and otherwise facilitate access to the great untapped vegetable oil storehouses in the northern states is the urgent need of Brazil.

I close this account with a part of the discussion which the U. S. Vegetable Oil Mission had with President Vargas at his summer home at Petropolis. The President had listened to the various recommendations of the Mission with the closest attention and then, after having assured us that they would be given the most earnest consideration, he turned to his daughter, who was acting as interpreter, and said, "Tell the gentlemen that if the United States had not spent so much time and money in the Philippines and Dutch East Indies and had come sooner to Brazil for its rubber and vegetable oils, it would be much better off; for now when you get back these countries with your cannon, the Japanese will have destroyed everything. You will have nothing left there and you will have to remain in Brazil."

The writer, who was acting as spokesman, was pleased to see President Vargas break into a hearty laugh which indicated that he thought the answer made was a correct one. The reply was, "Tell your father, the President, that that will not be a hard bed to lie in."

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Ewing Galloway

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INSIDE NEWS

AUGUST PREPARED BY NATIONAL CAN CORPORATION, NEW YORK, N. Y. 1942

Westinghouse Develops Electronic Tin Separator

With Malaya and the Dutch East Indies in the hands of the Nipponese, the United States must look to domestic tin deposits to yield at least part of the strategic metal formerly imported from the Far East. Long considered economically unprofitable for wide-scale exploitation, America's low-grade tin deposits have hitherto produced only a little more than 1,000 tons annually. This is a mere dribble compared to the 40,000 tons of tin normally received from far eastern sources. That the unpromising outlook of American tin production may have improved recently is due in no small measure to the ingenuity of Westinghouse engineers.

An electronic ore separator, designed to refine a variety of low-grade ores, has been developed in the Pittsburgh laboratories of Westinghouse Electric & Mfg. Company. If the new device is as efficient in actual mining operations as in laboratory experiments, it may prove to be a valuable aid in easing the nation's tin shortage. In laboratory tests, the machine has successfully refined ores of tin, iron and gold. Westinghouse engineers, however, are careful to point out that its application to commercial operations is still in the experimental stage.

At a recent demonstration, conducted before a group of metallurgical experts, including university professors and representatives of the U. S. Bureau of Mines, the Westinghouse electrical ore separator passed its first public test with flying colors. Ten pounds of ore, containing only 1½% tin, dried and ground to the fineness of beach sand, were placed on a foot-wide metal drum. Turning at a speed of 12 miles an hour, the drum sorted the 10,000,000 particles in the ore within a period of one minute into two separate piles. One pile was made up of ore containing approximately 70% tin, suitable for smelting. The other pile contained rock and sand and an insignificant quantity of tin.

The Westinghouse ore separator operates on the principle of an "electrical spray" which "washes" the metal out of the ore. As the particles of sand, rock and tin travel around on the rotating drum, they receive high voltage electrical charges from a series of fine wires located a short distance from the drum's surface. Since the tin particles are good conductors of electricity, the electrical charges pass through them into the metal drum. The tin particles thus lose their charges and fall off the drum before it has made more than half a revolution. On the other hand, the rock and sand particles are poorer conductors of electricity than the components of tin. Retaining their electrical charges, the particles of rock and sand cling to the drum until they are pulled off—during the second half revolution—by a series of oppositely charged wires.

When introduced into the trough of the Westinghouse electronic ore separator, low-grade tin ore is concentrated from 1½% metal to 70% metal suitable for smelting. Using ten pounds of ore, the operation takes approximately one minute to effect the separation of pure tin from rock and sand.

Although it is necessary to dry the ore before it can be separated by an electrical spray, the Westinghouse device may prove to be more efficient than present methods of concentrating ore which do not require drying. In addition to refining low-grade ores, the machine may be used to purify foods. And in the not-too-distant future it may even be used to separate foreign materials from grains and stems from raisins. According to a spokesman for the Westinghouse Research Laboratories, the good conductors among foods are the ones which contain the most water. Conversely, the poor conductors are foods which contain appreciable amounts of oil and little water. (180)

Colima, Center of Mexico's Lime Oil Production

Despite its size, tiny Colima, located about two-thirds of the way down the west coast and almost parallel to Mexico City, is Mexico's chief lime-producing State. Mexico itself leads the Western Hemisphere in this respect, probably ranking second only to Egypt in world-wide production. Having an area of only 12,009 square miles and a population of 61,923, Colima ranks first with 20 per cent of the lime-producing trees, neighboring Michoacan second with 16 per cent, and Veracruz third with 15 per cent.

The growing of limes is Colima's number one industry, outranking production of sugar, coquito nuts, coconuts, rice and other foods.

Although the production of lime oil is a fairly recent development, this aspect of the industry is mounting steadily in importance. Practically all the lime-oil plants of Mexico are located in Colima. The first plant was built in 1935, and some 2,800 pounds of distilled oil were produced that year from 400 tons of limes. In 1941, over 48,000 pounds of lime oil were distilled from more than 5,000 tons of limes delivered to the seven mills now in operation. Three new mills are being built this year, and it is estimated that 1942 production of lime oil will exceed 50,000 pounds. (181)

Canned Cheese May Prove Commercially Profitable

Canned cheese soon may be a practical commercial enterprise if proposed experiments in New York State produce satisfactory results. Procedures for canning natural cheese have been worked out at the Dairy Division of the New York State Agricultural Experiment Station at Geneva. Funds were allotted recently to make trials of these procedures under commercial conditions to determine their practical applications. Results of the tests will be made known when sufficient data is obtained. (182)

BY
NATIONAL CAN

AUGUST PREPARED BY NATIONAL CAN CORPORATION, NEW YORK, N. Y. 1942

National Can's New Chicago Plant Swings Into Operation

Construction of National Can Corporation's new Chicago Plant has recently been completed. Latest link in National Can's expanding chain of modern manufacturing plants, the new unit has been supplying canners with sanitary cans for more than 60 days.

The plant is located in Chicago's "clearing district" at 6000 West 51st Street. It is removed from local traffic centers, but is strategically accessible to all the main highways and railroads which serve the nation's great food-growing region. A valuable new source of tin containers, National Can's Chicago plant is completely equipped with modern can-making machinery and skilfully-trained personnel. (183)

Plenty of Coffee For Our Armed Forces

Men in the Armed Forces of the United States will have plenty of coffee to drink this year. Figures released by the Jersey City Quartermaster Depot, which now purchases all the coffee for the Army, Navy and Marine Corps, reveal that 209,968,564 pounds of green coffee was bought from January 1 to May 23. This amount is equivalent to 3,200 carloads. The cost was about $30,000,000. (184)

Wheat Germ Oil Prevents Milk Rancidity

The rapid spoilage tendency of dried whole milk under wartime shipping conditions, especially in the huge quantities required by Britain under the Lease-Lend plan, has been a matter of grave concern to British and American officials. It is, accordingly, of considerable interest that two Canadian investigators have devised an effective and practical means of improving whole milk powder stability over periods from two months to a year.

The method consists in homogenizing an extracted wheat-germ oil in skim milk and adding the resulting emulsion to the fresh whole milk during the fat adjustment prior to spraying. Although performed on spray-dried milk, it is understood that similar results have been obtained on roller-dried milk. Carefully controlled stability tests also have revealed that the keeping quality of lard may be doubled by the incorporation of extracted wheat-germ oil by a special process. (185)

Rare Chemicals Registry Planned

A national registry of rare chemicals is being established in Chicago as a service to American science and industry. The new registry will index the chemicals too rare to be found in the commercial catalogs, indicating their name, location, and amount available. (186)

. . .

An average chair contains enough hardwood to make the stock of a Garand rifle.

For every ten 30-foot cruisers that aren't being built this year our Navy can have another mosquito boat.

Technical Topics

SALT administration to industrial workers, believed at first to be of value only in alleviating heat collapse, has also been found to actually increase the efficiency of workers suffering from fatigue due to the heat. According to recommendations of the United States Public Health Service as to the amount of salt needed under various conditions: Light work should be treated with 3 ten-grain tablets a day; medium work with 6 to 10 ten-grain tablets a day; and heavy work, 10 to 18 ten-grain tablets a day. (187)

CIGARETTES—Americans trail Latin Americans in cigarette consumption. South of the U. S. A., 350,000,000 cigarettes are smoked per day, or 1,600 a year per person. Our consumption averages 1,400 per year per person. (188)

METHYL SILICAN compounds are suggested as synthetic resins in England. Made by the hydrolization of methyl silicon halides, the new condensation products are said to be insoluble in water, alcohol, and glycerin, and to be clear, colorless and nonsticky when solid. Similar products formed in a solvent, such as ether, are said to be suitable for coating compositions for wire, asbestos, and mica products. (189)

INSECTICIDES—Two tons of nicotine, extracted from tobacco, are needed each year by the insecticide industry. (190)

PETROLEUM RESISTANT FILMS are obtained by gradually stirring a sulphyrous acid into a concentrated alcoholic-ammoniacal lac solution, it is stated in a recent British article. The films obtained with the mixture are clear, glossy, and flexible, if plasticized, it is added. They can be made water resistant by heating or by the addition of or exposure to formaldehyde. (191)

KAPOK is an American native plant introduced into the Netherlands East Indies, which supplied America with the commercial product. Now production is again developing in South America, particularly in Ecuador. (192)

A GUM RESIN, made from tomato skins, is being used abroad to take the place of linseed oil in the manufacture of linoleum. (193)

Every effort will be made to furnish additional information on these articles. Where such information is not obtainable, we will refer inquirers to the original source of the article. Write to National Can Corp., 110 E. 42nd Street, New York City. Please mention the number at end of article—also name of the magazine you saw it in.

(Advertisement)

Cutting Oil Disinfectant

For the maintenance of health in industry

Cause of Skin Infections

It frequently happens that the workmen handling steel cutting machinery have the skin of their hands cut many times daily by small slivers of steel cuttings. Cutting Oil in its natural state provides an ideal place for putrefactive pus forming bacteria to incubate or grow. The Cutting Oil is contaminated in this manner, the bacteria find easy access to the cuts in the worker's hands, and as a result, boils and infections start to form.

To insure a minimum of infection resulting from the numerous cuts, scratches, and abrasions to which the skilled worker's hands are subjected, it is necessary to use a powerful Germicide in the Cutting Oil which is used as a lubricant and cooling agent during the cutting of metal.

It requires only very small percentages of Disinfectant in the Cutting Oil to obtain the desired results.

There is little if any trouble from the application viewpoint because it is only necessary to add the requisite amount of Disinfectant to the Cutting Oil, agitate the mixture and it is ready for use.

If nothing is done to counteract this condition, the pus forming bacteria sometimes find their way into the blood stream and the worker breaks out with boils all over the body.

As a preventive measure, incorporate a powerful Disinfectant in the Cutting Oil to kill the bacteria in the Oil and at the same time to provide a Germicidal wash over the worker's hands all the time he is using the machine. The worker will still be cut constantly by tiny slivers of steel, but the bacteria will be dead or rendered impotent and infection does not take place.

Many plant superintendents are not aware that the infections are caused by bacteria present in the Cutting Oil and would welcome the use of this low priced highly efficient method of combating infection on the worker's hands.

The proper use of Cutting Oil Disinfectants practically guarantees that the workmen's hands will be free of boils and other similar infections caused by cutting oil containing infectious germs.

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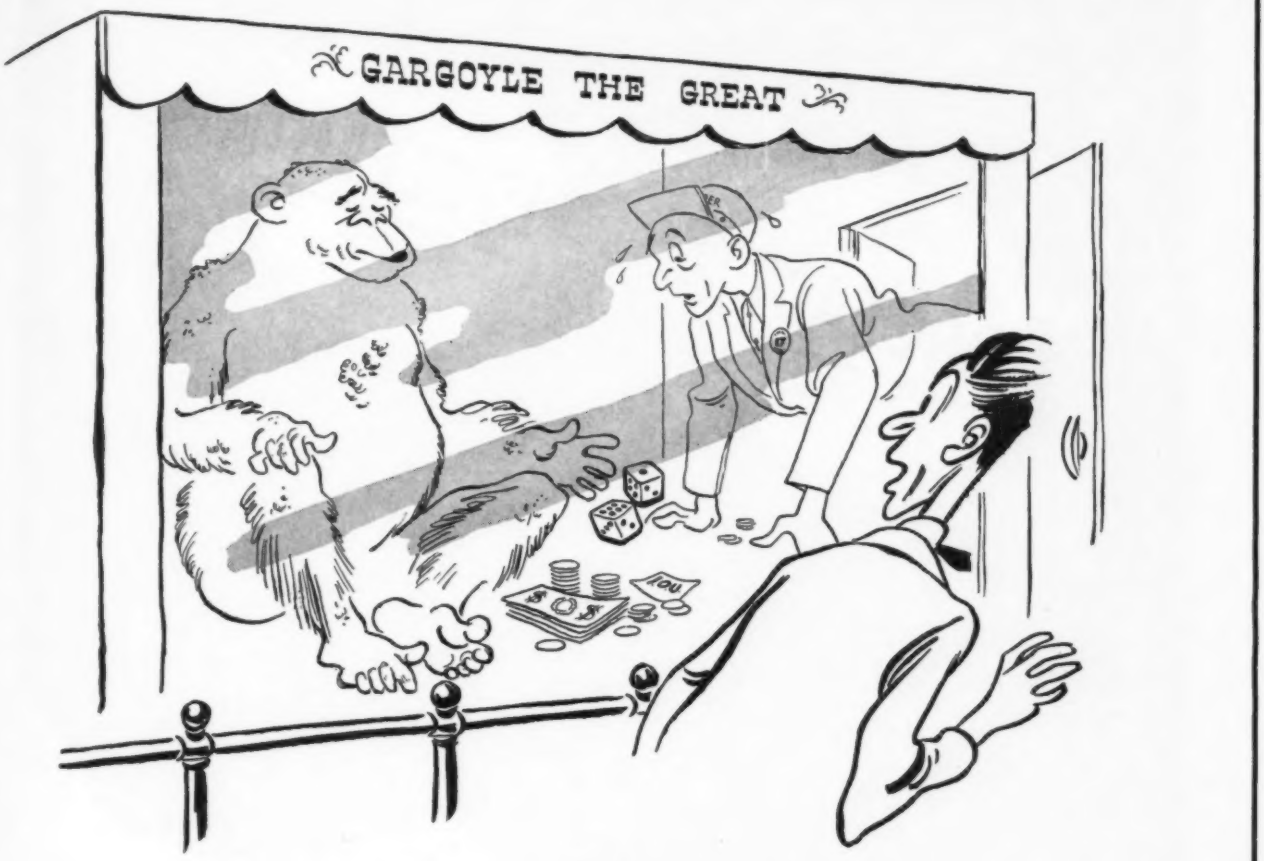

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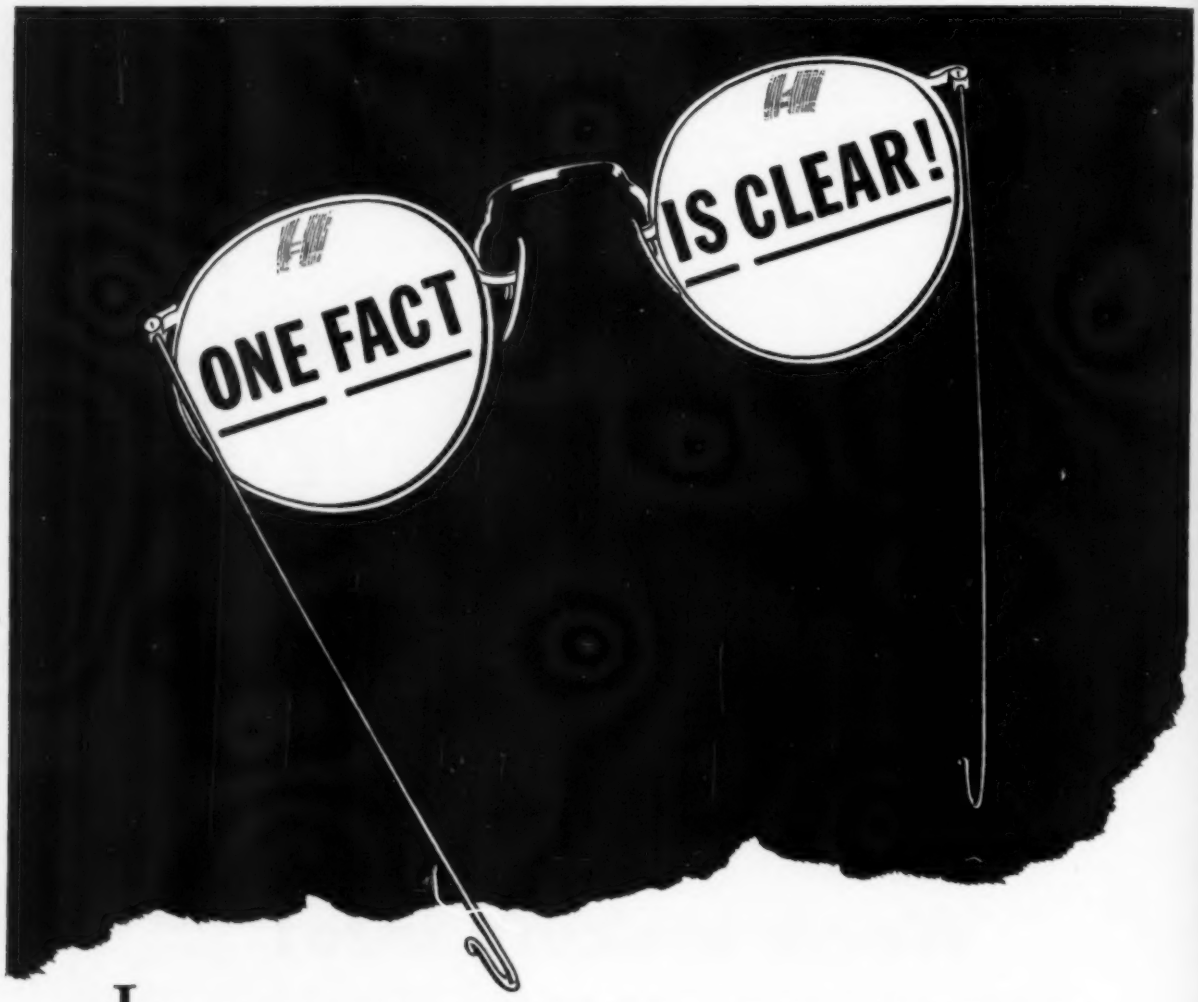

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ESTABLISHED 1798

SANITARY PRODUCTS

Official Publication, Nat'l. Assn. of Insecticide & Disinfectant Manufacturers

JUST what are the chances of the average insect spray manufacturer obtaining any further supplies of pyrethrum extract in the near future? First, the chances are not too good if we take all the facts as they now appear at their face value. But, the WPB is working feverishly to clear the pyrethrum bottle-neck if we may judge from reports of the recent Insecticide Advisory Committee meeting in Washington. We also feel that with any kind of good luck, arrivals of pyrethrum from Kenya over the balance of 1942 will be larger than is generally anticipated. The WPB has this household insecticide situation well in hand, and without being unduly optimistic, we believe that short of jeopardizing reasonable stocks for our armed forces, the WPB will spare no effort to clear the track so that insecticide manufacturers may obtain raw materials in order to supply finished sprays to foodstuffs processors and other industries where the need is vital.

TO SAY that the purchase of insecticides by various departments of our armed forces as well as other departments of the U. S. Government is a hit-or-miss affair, is to put it very mildly indeed. A dozen different specifications, each drawn independently and in some cases for different geographical divisions of the same government service, all unscientific and wasteful of critical materials, reputable manufacturers refusing to bid because they know they cannot meet the requirements as given, and the government ending up paying a high price for an inferior product,—this is the picture in the purchasing of insect sprays today,—and it is a sorry state of affairs.

Isn't it about time that there were standard specifications for one or two grades of insect spray and the purchase of these made *mandatory* upon *all* government departments, including the Army? Why is there a Bureau of Standards if it is not for this very purpose? How long is this wasteful buying of insecticides to continue? Forever?

AN INVITATION for household insect spray bids was recently sent out by the U. S. Department of Agriculture, accompanied by a specification of which the following is a part: "The product shall produce a knockdown of 100 per cent in 10 minutes and an adjusted kill of at least 99 per cent within 24 hours after application, when tested in accordance with the Peet-Grady Method." Just what do they mean by "adjusted kill?" This term has no official status in testing household insect sprays and is actually meaningless. There is one way to determine kill by the Peet-Grady Method and that requires no "adjustment." Such a specification, coming as it does from the Department of Agriculture which numbers among its personnel some of the best known insecticide authorities in the country, is indeed a queer turn of affairs. Obviously, these experts were not consulted. Nevertheless, somebody should remind the purchasing division of the Department that there is such a thing as a Bureau of Standards Specification CS 72-38.

Public Health Aspects of
HOUSEHOLD INSECTICIDES *and* DISINFECTANTS

*By H. C. Fuller**

LINNEAUS, Swedish naturalist and originator of our present systems of zoological and botanical classifications, remarked 150 years ago, that three flies will consume the carcass of a horse as quickly as a lion can. A hundred years later in Ceylon, Sir Samuel Baker, mighty hunter and explorer, observed that three weeks after an elephant is killed, and allowed to remain unmolested, nothing is left but his bones and a heap of dried cases from which flies have emerged.

Howard, our most prolific writer on entomology, estimated in 1931 that the total number of different species of insects was not less than four million. Man in one form or another has left records for at least four hundred thousand years, insects are found in the fossilized state in the geological deposits of three hundred million years back, hence they have had a much greater opportunity to evolve a persistent type.

Insects not only have persisted throughout the climatic changes, shifts and upheavals of the globe, but they have grown smaller and more adaptable to the seas and continental areas that finally came to rest in their present forms. Back in the carboniferous age some insects, such as the giant dragon fly had a wing spread of two feet. Cockroaches have been constant inhabitants of the earth since the same period, and both types were for all intents and purposes of the same shape and general characteristics as the forms we see today sailing over the mill ponds and scuttling across the kitchen. The older paleontologists were wont to call the Pennsylvanian period, 200 million years ago, the age of cockroaches. Eight hundred fossil species have been described. Mosquitoes and ants found in amber, a fossil resin of the lower Oligocene, are no different in appearance from those now prevalent.

In order that you may have some conception of the vast extent of time that we have just noted, we might take a year of 365 days, as our yardstick. Let us assume that 3,650,000,000 years have elapsed since the earth, with the other members of our solar system, broke off from the sun, their parent. The geologists and chemists make it slightly less but, for the purpose of illustration, the figure will suffice. So let us make a year ago today the date of origin, and then each day since would be the equivalent of 10,000,000 years. On that basis our insect friends were flourishing and well established over a month ago, while our species did not show up until last week, about six days back to be more definite. Man did not start making bronze implements until less than a minute ago, and modern civilization as we know it, is but a few ticks of a stop watch.

Now just a few words in the same vein about bacteria and fungi. They go back to real antiquity and were present among the blue-green algae and other forms of vegetative life that appeared along the shores and in the seas a billion years ago, perhaps four or five months, on our time chart. It was fully two billion years after the solar indigestion before life appeared on the globe.

Bacteria left no fossil remains, but we find evidence of their work in the Pennsylvanian coal beds where plant tissue from the deposits shows destruction of cell walls that is ascribed to bacterial action. Moreover the deposition of pre-Cambrian iron ores, a billion years back, is attributed in part to the same cause. They occurred in the Paleozoic petroleum deposits, and feeding on the organic matter in the rocks, transformed it in part to petroleum and gas. Hence bacteria and fungi were really established before insects. They have persisted without interruption.

THE antiquity of insects combined with their ability to persist, and their remarkable powers of reproduction as exemplified in the beginning paragraph, are worth considering for a moment. Those facts, and the increasing extent to which man has become conscious of the personal annoyance and health hazard of insects, coupled with the activities of governmental agencies in developing ways and means for their control, lends considerable emphasis to the statement uttered on more than one occasion that we are living in an age of insects rather than an age of man.

There is more than a modicum of truth in that assertion. After man settled down to a more or less socialized state of living in Neolithic times, and community life developed until the so-called civilized state emerged, he began to upset the balance of nature and he

* Technical consultant, N.A.I.D.M. Address before the 28th mid-year meeting, Natl. Assn. of Insecticide & Disinfectant Mfrs., Chicago, June, 1942.

has been doing it ever since. Populations became exposed to insect ravages in a mass manner. What happened in one instance was that the mosquitoes of the Roman marshes got in their work, and the health and stamina of the people declined on account of malaria spread by those pests. That, combined with the softness engendered by the vicious life of the times, made it easy for the virile tribes of the north to hasten the disintegration of the Empire. Other natural calamities can be traced indirectly and directly to the influence of insects working in environments favorable for mass attack. Witness the terrible ravages of the plague in the middle ages when crowded living conditions and filthy habits favored the increase of rats and consequently the rat flea which spreads the disease. In modern times the development of large scale agricultural operations have provided unique and favorable environments for pests to propagate and multiply in numbers beyond the means of their natural enemies to control.

Insects as has been previously noted, have been part of the natural picture for at least three hundred million years. The type has been tried out thoroughly under world conditions while the human species is comparatively in its merest infancy. The balance of nature kept them within reasonable bounds as far as we can determine. They war among themselves, their life cycles are usually of short duration, and they have natural enemies among the other zoological forms, particularly the fishes and birds. If by some unfortunate circumstance our bird life were suddenly annihilated, the aspect of the earth's surface, as we know it today, would disappear in spite of all the artificial control measures that man is capable of providing. The importance of birds in keeping the insect population under control is recognized in the Migratory Bird law and the treaties for its enforcement entered into by this country with Canada and Mexico.

Howard puts it tersely when he says that the human type may be one of nature's experiments that will fail. It has not been in existence long enough to have been thoroughly tried out. It has jumped to the fore owing principally to the evolution of the quality known as intelligence. Through this intelligence it has either destroyed or controlled or converted to its own use nearly all other forms of life.

However in its rapid increase and spread, the human species has so disturbed the balance of nature as to favor the spread of disease-bearing microorganisms and to encourage enormously the multiplication and spread of injurious insects. In its efforts to feed its increasing millions, the human race has fed increasing millions of insects.

When the public began to wake up to the fact that insects were actually a menace to health, life and pocketbook, and not simply annoyances that were endured because they were part of everyday existence, means were sought to curb their spread and depredations. Later when it was definitely established that they contributed to the spread of debilitating and fatal maladies, the picture took on a more serious aspect and the war became not only defensive but offensive. Then our scientists settled down to a study of life histories, and intelligent measures were developed for the destruction and control of injurious species. The natural sequence to this was the enactment of laws to control the traffic in insecticides insofar as concerns their purity, effectiveness and health hazard.

The relationship between mosquitoes and the spread of yellow fever and malaria; fleas and plague; lice and typhus; flies and typhoid, are too generally known and accepted to require discussion. Mosquitoes, fleas and lice are necessary intermediaries for the distribution of the diseases; flies transfer disease organisms by contact. It is a peculiar provision of nature that the insect hosts are not affected fatally by the same diseases which may be fatal to man.

Mosquitoes are now credited with the spread of equine encephalomyelitis, a form of sleeping sickness that may be transferred to humans. Ticks of course are necessary to infect humans with Rocky Mountain spotted fever, and this disease has stealthily moved from its original range until it is now established throughout the country, and there are annual outbreaks during the tick season on the Atlantic seaboard as far north as Massachusetts.

Besides typhoid, Rosenau reports that flies may transmit the infection of erysipelas, anthrax, glanders, cholera and dysentery. It is known that flies may ingest tuberculous sputum and excrete tubercle bacilli, which may remain virulent as long as 15 days. It has been found that a single fly may carry from 500 to four and a half million bacteria upon its surface and from sixteen thousand to twenty-eight million in its intestinal tract.

Certain species of bacteria, ingested during the larval period of the house fly in filth, garbage or excrement, retain their viability while the host is undergoing the process of metamorphosis, and continue their existence in the alimentary canal of the adult.

Flies may transmit disease organisms mechanically. They may be carried upon the proboscis or on the surface of their bodies, but it is considered that the usual mode of transfer is through their dejecta. Thus disease may be carried to the lips, nostrils, fingers and surface wounds, and also distributed on food and other objects. The importance of sanitation in the household is thus apparent.

Flies are credited with the ability to carry the virus of infantile paralysis. The theory is not new. It is current at the present time, and while it has not been proven to the universal satisfaction of the medical fraternity, it is at least a good bet and should not be ignored.

Roaches are a sanitary menace. They have become domesticated to the extent that they inhabit sewers, toilets, water mains as well as kitchens and storerooms. They are capable of transmitting infection mechanically. Moreover their excrement and a fluid from their mouths fouls the food with which they come in contact, as well as cupboards, table drawers, and wherever they abide.

The bed bug, further to quote Rosenau, is a truly domesticated insect. It has accommodated itself completely to the environment of human habitation. It is a sanitary menace and is under suspicion as an intermediary in

the transfer of many infectious diseases such as relapsing fever and leprosy. On the other hand there is no convincing evidence that it is the usual or ordinary transmitter of these or any other disease known to us. When it acts as an intermediary host it apparently does so by mechanical transmission of the disease organism on the mouth parts. But in the case of the bed bug, as with the fly as a possible carrier of infantile paralysis, it is another sanitary menace that should be rigorously controlled.

AT the present moment we are in the midst of an emergency. There is an Office of Civilian Defense which has, for one of its objects, the safeguarding of our population from a state of nerves,—to prevent us from reacting to situations which ordinarily would not cause concern. But our people are now more than usually on the alert about their kitchens and particularly the food on the shelves and in the ice boxes of the homes. Bugs, whatever they may be, ants, roaches, bed bugs, fleas and flies with their well known propensity to soil and contaminate, contribute to hysteria, and their control in the home needs attention from this standpoint as well as the economic.

The same may be said for transportation facilities, rail, bus, ships, airplanes, and the eating places along the line. They are all unusually congested, and with the curtailment of private means of transportation, their capacity will be taxed more and more as time goes on. Insect control and sanitary cleanliness by our public carriers is a matter of concern to them right now.

Let us now turn to the military phases of our national life and see how they may affect the civilian population from a public health standpoint. We are engaged in warfare with people in widely separated areas, and among populations that are inured to diseases with which our men have had little or no contact. American boys will furnish virgin feeding ground for organisms, viruses and parasites new to them. When they are captured and placed in concentration camps it is a foregone conclusion that many of them will contract new maladies. Some of them will recover from the troubles and come home in good shape, others will carry the spreading agents in latent form, and be the means of passing along through insect vectors, new maladies which they contracted afield or types of disease that are established here but which will be disseminated in new forms.

As an illustration of the latter, I will cite what happened when a detachment of Nebraska troops went to the Philippines during the pacification period. The soldiers contracted what we will call a form of "Malaria" not then known in our country. On returning to their native soil, some of those men carried the parasites in the blood, and in a short time, due to transference by mosquitoes, the same disease became prevalent among the civilian population, to the consternation of the local physicians who were unfamiliar with the particular type of malady that confronted them. In the same manner we shall harbor prisoners of alien races and foreign groups who will carry the germs of diseases new to us, some of which may be transmissible by common insects.

This story is not a scare headline. It is a situation that deserves sober thought, and should be recognized and given due consideration by those in authority whose activities in any way are concerned with the public health, the care of our sick and the control of agents that are essential for the mitigation and destruction of pests or the minute organisms they collect and harbor. I believe there is a realization of the situation, even though some of you may feel that it has not been given the recognition that is its due. Those of you who are engaged in the production and distribution of agents designed to control the spread of insects in the home and on the farm, as well as for use by our military forces, ought to be given every encouragement possible to pursue your work unhampered. And the same freedom should be accorded those whose energies involve the formulation of various types of disinfectants and fungicides necessary to kill the actual disease agents, the microorganisms, bacteria, fungi and parasites, which, when implanted in or on the bodies of man or animals, produce the effects that characterize disease.

I HAVE brought to your attention a few of the high points in an endeavor to explain the relation of insects and microorganisms to the public health, and why under the existing emergency, there should be no cessation in their control and destruction. I will summarize the situation by emphasizing:

1. Insects, fungi and bacteria, in their present forms were established millions of years before the human species appeared upon the earth.
2. Insects, fungi and bacteria have demonstrated their ability to persist, through all the geological and climatic upheavals that have occurred since their appearance in the natural picture, while the human species is yet in its experimental stage.
3. The spread of disease by certain species of insects is common knowledge.
4. Both insects and microorganisms multiply with exceeding rapidity.
5. Constant vigilance coupled with rigorous control is necessary to curb the depredation of insects, parasites and microorganisms.
6. Under the present emergency no factor should be ignored that will aid in maintaining the poise of the civilian population and preserving the public health.
7. Adequate provision should be made to control insect and bacterial life that is liable to affect our armed forces at home and abroad, and those of the belligerent nations that may be harbored in our territory.
8. With this end in view our responsible officials in high places in the government should realize there is a public health problem confronting our population and have a sympathetic understanding of the situation, and see that there may be a comprehensive cooperation with those who are endeavoring to provide adequate supplies of insecticides and disinfectants for the welfare of our forces and the population as a whole.

The WAR PROGRAM

. . . and the part which insecticides and disinfectants are playing in it*

By Dr. John E. Dunn, P. A. Surgeon and Dr. Louis Schwartz, Medical Director

U. S. Public Health Service

THE war between man and the insect world is continual and relentless. Insects not only compete with man for food, but they are the means of inflicting some of the most deadly diseases to which humans are heir. For example, the flea spreads plague and endemic typhus fever; the tick carries Rocky Mountain Spotted Fever and tularemia; the mosquito is the vector for yellow fever, malaria, and probably equine encephalomyelitis, etc.; the body louse transmits epidemic typhus fever, the scourge of armies, which has already appeared on the German-Russian front in the present war. These are a few of the diseases of men which are insect borne.

It is stated that the annual loss due to injurious insects in the United States represents about two billion dollars. The damage to crops by bacteria and fungi amounts to another billion dollars. The cost of combating these pests by the use of insecticides and fungicides entails an annual expenditure of about one hundred million dollars.[1] This total of more than three billion dollars is dwarfed beside the astronomical figures to which we are becoming accustomed in the purchase of the materials of war, but the food and other materials that it represents are losses that cannot be regained merely by an appropriation of money. America is symbolized as the arsenal of democracy, but our role as the larder of the allied countries is not an unimportant, if secondary, one. With more and more of our man power being absorbed by the armed forces and war industries, the farm labor supply will be greatly reduced, which will make it more difficult to apply control measures to prevent the losses of food and other materials resulting from the depredations of insects and other pests at a time when such losses can least be afforded.

The means for controlling insect pests is further complicated by the fact that this country has depended to a large extent on imports for certain insecticides. Thus, we used twenty million pounds of pyrethrum in 1937, most of which came from Japan. During this same year over half a million pounds of derris root were shipped in from the Netherlands Indies, British Malaya, and the Philippines, and over one and a half million pounds of Lonchocarpus root from Peru and Brazil.[1] The Derris and Lonchocarpus root imports were increased to six and a half million pounds by 1940.[2] All but the South American sources of supply are closed to us now, and the present difficulties in shipping make even these supplies doubtful.

It is obvious, then, that there is a need for effective insecticides, fungicides, and disinfectants at the present time to increase the production of food and other materials, apart from the medical use of these agents for destroying the insects that affect human beings directly. In using agents of this type, consideration needs to be given not only to their effectiveness as an insecticide, fungicide, etc., but also to the possible harmful effects on those who apply the agent, on those who use the product that has been treated, and the secondary effects on those using these agents for medicinal purposes. For example, the ideal insecticide would be one that is completely effective in eliminating the insect against which it is being used, and yet is entirely innocuous to human beings exposed to it. The following discussion will be largely concerned with this second aspect, and more particularly with the dermatitis hazards associated with these agents.

Insecticides can be divided into two main classes, (1) the inorganic, and (2) the organic compounds.

Inorganic Insecticides

Arsenical Insecticides: Arsenic compounds are among the oldest of the present day insecticides. Arsenious oxide mixed with honey was used as an ant poison in the 17th century.[1] Lead arsenate and calcium arsenate are the arsenic compounds used in the greatest quantities as insecticides at the present time. However, other arsenic compounds such as Paris green, white arsenic (arsenious oxide), sodium arsenite, zinc arsenite, magnesium arsenate, etc., are also used in lesser quantities. The various arsenical preparations are well suited to their purpose as stomach poisons for many chewing insects but they have the disadvantage of being toxic hazards to man as well. Lead arsenate offers a hazard from lead as well as from arsenic. The protection of the public from undue exposure to arsenical insecticidal residues on fruits and vegetables has been a matter of

* Address by Dr. Dunn before the 28th annual meeting, Natl. Assn. of Insecticide & Disinfectant Mfrs., Chicago, June, 1942. From the Dermatoses Investigation Section, Division of Industrial Hygiene, National Institute of Health, Bethesda, Md.

some concern for the past 25 years. Beginning in 1927 the Federal Food and Drug Administration established tolerances for arsenic residues on fruits and vegetables shipped in interstate commerce. In 1932 this tolerance was set at 0.01 grain of arsenious oxide per pound for all fruits and vegetables and in 1938 a tolerance of 0.025 grains per pound was set for lead.[3]

As a dermatitis hazard, the arsenical insecticides are of importance in a number of different ways. The arsenic compounds may act as primary cutaneous irritants when there is a heavy exposure under certain conditions. By a primary cutaneous irritant is meant an agent which will cause dermatitis by direct action on the normal skin at the site of contact if it is permitted to act in sufficient intensity or quantity for a sufficient length of time.[4] Such exposures occasionally occur during the manufacture or use of the arsenical insecticides when workmen are not adequately protected from dust created in handling these compounds. Skin irritation usually occurs at points of friction and where the skin is moistened by perspiration. Those exposed to dust from arsenic compounds also experience irritation of the nasal mucosa which eventually progresses to ulceration, and may result in perforation of the nasal septum. These manifestations of cutaneous and mucous membrane irritation from arsenical compounds may be readily controlled by the use of entirely enclosed manufacturing processes, local exhaust ventilation, protective clothing, respirators, etc.

Arsenic also acts as a cutaneous sensitizing agent. A cutaneous sensitizing agent is defined as one which does not necessarily cause demonstrable cutaneous changes on first contact but may effect such specific changes in the skin that, after five to seven days or more, further contact on the same or other parts of the body will cause dermatitis.[4] Although dermatitis of this allergic type will occur in only an occasional individual, it is more difficult to cope with when it does occur since exposure to very small amounts of the offending compound will be capable of inducing the dermatitis. When this allergic type of dermatitis occurs in a workman manufacturing arsenical insecticides, or in one using the product on growing crops, the diagnosis is relatively easy, but less obvious exposures may be more difficult to ferret out. Thus a case has been reported of dermatitis of the face affecting a farmer, which was found to be due to the farmer's practice of carrying alfalfa in his arms to feed his cows.[5] The alfalfa had been treated with an arsenical insecticide. In another instance smoking cigarettes was found to cause an exacerbation of arsenical dermatoses.[6] A number of studies have been made to show that most smoking tobacco contains volatilizable arsenic as a result of using arsenical insecticides on growing tobacco.[7, 8] A study was made of eight cases of dermatitis attributed to arsenic all of which recovered upon discontinuing the use of tobacco, with recurrences when tobacco was used again.[7] Undoubtedly the cause of many arsenical dermatoses escape detection because the nature of the exposure is unknown to the patient and therefore not elicited by the physician. For instance, in one series of 85 cases of arsenical dermatitis reported in the literature, five were attributed to arsenical sprays, and sprayed vegetables, 29 were due to arsenic therapy and other sources, and the source of the arsenic in the remaining 44 could not be determined.[5]

In addition to these acute dermatoses that may result from exposure to arsenic, long continued absorption of arsenical compounds may lead to epithelial proliferations producing keratoses of the palms and soles most frequently, and involving other skin areas as well. These lesions may be progressive and show a tendency toward malignant degeneration. Most of the cases of this type reported in this country have occurred in persons taking medicinal arsenic preparations over a long period of time. The foreign literature, however, contains a number of reports of dermatoses of this type occurring among vineyard workers and attributed to the arsenical insecticides used. Wine made from the grapes of these vineyards also contains appreciable quantities of arsenic, and there is some question whether the arsenic content of the wine or the application of the insecticides is the more important source of the arsenic absorbed by these vineyard workers. Fortunately, there is no evidence as yet that the insecticidal use of arsenic in this country has been responsible for cases of this type.

Fluorine Compounds: The compounds of fluorine are considered the best inorganic insecticide substitutes for arsenic, but unfortunately they are also toxic for man, although less so than the arsenical insecticides. To obviate any possible toxic effect from fluorine residues a tolerance of .02 grains per pound has been established. Sodium fluoride, as a common constituent of insecticidal powders for roaches, poultry lice, insecticide bait, etc., has been responsible for a number of accidents when the powders have been mistaken for medicine or food substances. Most fluorine powders are now colored to prevent such careless errors.

Some of the fluorine insecticides, especially the fluorides, may cause skin irritation under certain conditions. The complex salts, such as the fluosilicates and fluoaluminates, however, rarely affect the skin. In addition, the inhalation of sodium fluoride dust causes irritation of the nasal mucosa, and perforation of the nasal septum may result from continued exposure. Dental fluorosis is a possible result of long continued ingestion of small amounts of the fluoride compounds, and is the principal hazard for consumers ingesting fluorine residues on fruits and vegetables. The practice of using insecticidal sprays containing fluorine compounds on some crops throughout the growing season at one time, and lead arsenate at other times, brings up the question whether, even though the individual compounds are within the tolerance limits for spray residues on the marketed product, these toxic substances may not produce toxic effects from their combined action.[3] There are a number of other insecticidal preparations classed as stomach poisons such as tartar emetic, thallium salts, mercury salts, cuprous cyanide, etc. Practically all of these are toxic substances for humans and many of

them can cause dermatitis under certain conditions.

Sulfur compounds: Sulfur and its compounds are among the oldest and most widely used of the insecticides and fungicides, sulfur being one of the few substances effective in both these capacities. It has long been used in medicine as one of the most reliable of the parasiticides for scabies, pediculosis, etc. A recent report stated that sulfur has been found to be an effective repellent for chiggers, and the sand flea or jigger, which may be encountered by troops in regions where these two mites are prevalent.[9]

Although many forms of sulfur are used for insecticidal and fungicidal purposes, it is chiefly used in the form of dusting sulfur and sulfur-lime. There is but little cutaneous hazard from the sulfur insecticides.

Organic Insecticides

Because of the toxicity for humans of many of the inorganic insecticides, there has been a relentless search for substitutes that would be equally effective as insecticides, but relatively non-toxic to humans. Organic compounds have seemed to be the most promising, some of them occurring naturally and others being synthesized from readily available materials. Most of these are classed as contact insecticides.

Pyrethrum: Pyrethrum has been known for many years to have insecticidal properties and its use in this country as a constituent of household, garden, and livestock sprays has increased considerably during the past 20 years. It has the distinct advantage over most inorganic insecticides of being relatively non-toxic to mammals. Furthermore, the exposure of pyrethrum to sun and air causes it to lose a great part of its toxicity. Therefore there seems to be no danger from the consumption of food treated with a pyrethrum insecticide, nor is there any great danger to those preparing or using pyrethrum insecticides in so far as systemic toxic effects are concerned.

Pyrethrum does have the ability to induce allergic reactions in humans, however, and may exert its effect on the respiratory mucous membranes to produce hay fever and asthma, or on the skin to produce contact dermatitis. The allergenic principle of pyrethrum responsible for these reactions has not been determined. One investigator has found that at least half the ragweed-sensitive individuals he tested were also sensitive to pyrethrum, and he concludes that the allergenic substances of ragweed and pyrethrum are closely related.[10] This authority also is of the opinion that the allergen causing respiratory symptoms is not the same as the one responsible for dermatitis. In another study which was made to determine the constituent of pyrethrum responsible for dermatitis it was found that the pyrethrins themselves were apparently without effect, but certain fractions obtained from a petroleum ether extract of the pyrethrum flower produced intense reactions.[11]

From this it is evident that the principal harm from the use of pyrethrum as an insecticide is to produce allergic reactions in those individuals who are sensitive to the allergenic principle or principles it contains. If further study exonerates the pyrethrins themselves from responsibility for these reactions, then it may be possible in the future to eliminate the allergenic principles from pyrethrum extracts.

A recent report from Africa of the use of pyrethrum powder as a mosquito repellent and for killing fleas, is encouraging as to the prevention of the diseases transmitted by these insects.[12] Pyrethrum has proven to be an effective spray for use in airplanes to kill Aedes egypti, the mosquito that transmits yellow fever.[13] The ever increasing air travel between this country and South America, where endemic foci of yellow fever exist, makes it essential that these mosquitoes be prevented from entering our country.

Pyrethrum has also been used with success in ointment form for the treatment of scabies.

Rotenone: Rotenone, like pyrethrum, is another naturally occurring insecticide which has been in increasing demand during recent years. Derris root from British Malaya and the Dutch East Indies, and the Cubé root of Peru and the timbo root of Brazil have been the principal sources of this insecticide. It is also much less toxic for mammals than most of the inorganic insecticides. However, there is evidence that absorption through the respiratory tract carries some toxic hazard, and it is advisable for those exposed to rotenone dust to wear suitable respirators.[14,15]

The parallel between pyrethrum, and Derris and Cubé is further borne out in their allergenic properties. There are several reports in the medical literature of allergic dermatitis caused by sensitivity to Derris and Cubé insecticides.[16,17] The occurrence of asthma due to sensitivity to insecticides containing rotenone has also been reported.[18] These allergic reactions appear to be the principal hazard from using Derris and Lonchocarpus as an insecticide. There may also be the possible toxic effect of breathing heavy concentrations of rotenone dust such as might be found during grinding and mixing operations.

Rotenone has also been used with success in an ointment for the treatment of scabies.

Since both pyrethrum and rotenone have been gaining such wide use as constituents of household and garden insecticidal sprays, it is necessary for physicians to keep them in mind as possible etiological factors in cutaneous and respiratory allergic symptoms of obscure origin.

There are many other well known insecticides and fungicides that cannot here be dealt with individually. Such are nicotine and the copper compounds which are systemic poisons but are not particularly important as causes of dermatitis; selenium compounds, which have only recently been used to any great extent as insecticides, and which may produce both toxic effects and dermatitis; thallium salts, which are very toxic, and have been used especially in rodent control; the coal tar derivative, such as creosote oil, which are skin irritants; etc.

The fumigants are another class of insecticidal and fungicidal compounds that cannot be more than mentioned. A recent article compares the efficacy of five well known fumigants for the destruction of bed bugs.[19] Chlorpicrin seemed to be the most de-

sirable of the fumigants tested, and the possible usefulness of this compound is suggested as a delousing agent for clothing where suitable steam equipment is not available.

The most promising development for the future in the field of insecticides and fungicides, and a development which is especially urgent at the present time, is the production of synthetic agents. Synthetic insecticides and fungicides have a number of advantages over naturally occurring products. Our present predicament of being shut off from our principal sources of pyrethrum and Derris root is one of the best arguments for a synthetic substitute that can be produced from domestic raw materials. Another advantage is that synthetic products are relatively pure and known concentrations of the active agent can be assured, whereas the concentration of the active agents in naturally occurring insecticides varies, depending on where and under what conditions the parent plant was grown, and it is necessary to make assays to determine the amount of the active principle present. Toxicological studies of pure synthetic compounds are much simpler than of naturally occurring compounds which contain various constituents that may contribute to the toxicity of the insecticidal principle. It was previously pointed out that investigations indicate that the pyrethrins themselves apparently are not responsible for the dermatitis, hay fever, and asthma that occur in some individuals exposed to pyrethrum.

There are a number of synthetic compounds that are being used commercially as partial or complete substitutes for naturally occurring insecticides. The thiocyanates are a promising group of compounds and there are on the market efficient insecticides of this type. Various amines and organic sulfur compounds also show some promise as insecticidal agents.

The research for synthetic insecticides and fungicides has several phases. First, a chemical must be found that will be effective against insects or fungi. Next, it must be determined whether plants, fruits, vegetables, etc., will be injured to any extent from the application of the insecticide or fungicide. Lastly, the possible effect of the chemical on humans must be determined in order that the necessary precautionary measures can be taken in the manufacture and use of the insecticide. This includes, of course, the possible toxic effects of spray residue on fruits and vegetables ingested by the consumer. The technics for carrying out such investigative work are fairly well worked out with the exception of determining the allergenic potentialities of such compounds. Animals can be used to determine with a fair degree of accuracy whether a compound is a primary skin irritant or not, but they are not satisfactory for experimentation to determine whether a compound has the ability to produce specific hypersensitivity of the skin or mucous membranes of human beings.

A method has been proposed by the U. S. Public Health Service for testing the cutaneous sensitizing properties of new compounds to be used as insecticides,[20] and a similar type of test has been suggested for testing any new compound before it is sold to the public for general use.[21] Briefly, such a test consists in an attempt to duplicate actual conditions of exposure that might exist in the manufacture or use of the insecticide. In the case of the insecticidal spray that was being discussed in the article where the testing procedure was outlined, it was recommended that human subjects be exposed to the insecticidal spray in a closed room for 15 minutes a day for at least ten days, and then observed for evidences of dermatitis for another ten days. A group of 200 test subjects was recommended for carrying out such tests. If dermatitis or asthma occurred in such a tested group the insecticide would be unsuitable for general public use. Certain changes might need to be made in the detailed circumstances of conducting such tests, depending on the nature of the substance being tested, but the general plan would be the same. Failure to produce dermatitis in a group of 200 individuals would not mean that an occasional individual might not become sensitized, but at least the public would be protected from the marketing of a product that is a powerful sensitizing agent.

Nothing has been said about disinfectants nor can a detailed discussion of these agents be considered here. Recently different manufacturers have proposed the impregnation of fabrics with various disinfecting agents to "sanitize" or "hygenize" them. Presumably such impregnated material would remain free of disease producing organisms. There seems to be little justification for such use of disinfecting agents, since it is doubtful whether they would effect any great reduction in the incidence of disease, and the occasional cutaneous hypersensitivity that such agents might induce would outweigh the questionable value they might have.

In summary, then, it may be said that there is a great need for the discovery and synthesis of new insecticides and fungicides at the present time, not only to replace some of the sources of natural products that are lost to us because of the war, but to provide better products than some of those now in use. Food is vital to the prosecution of the war and we can little afford to share it with our insect pests.

The war has brought new problems in combatting insects that cause or transmit disease. Troops must be kept free of these parasites if they are to function most efficiently. While we do have effective means for controlling most of these insects, there is ample room for improvement in the development of such agents as insect repellants, fumigants, anti-scabetic preparations, larvacides, etc. Large groups of our civilian population have also been disrupted because of the war and the development of war industries. They too must be kept free of disease carrying insects if we are to maintain our full strength for the production of the weapons of war. But in producing these new synthetic insecticides, the chemist must ever bear in mind the fact that they must not be toxic to human beings.

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MOTHPROOFING TESTS

By F. W. Fletcher and E. E. Kenaga

Dow Chemical Company

ABOUT two years ago sufficient interest in standardization of mothproofing tests resulted in the establishment of the Mothproofing Sub-Committee under the Insecticide Scientific Committee of the National Association of Insecticide and Disinfectant Manufacturers. Similar committees were already in existence in both the American Society for Testing Materials and the American Association of Textile Chemists and Colorists. Through mutual agreement these three committees are at the present time cooperating in an attempt to establish a standardized procedure for testing fabric pest deterrents. These committees have also agreed, along with the National Better Business Bureau and others, that the term "mothproofer" is in no sense an adequate or correct term because other insects are equally destructive; therefore, the use of "fabric pest deterrent" is suggested.

At the beginning of this project, existing test methods were surveyed and studied. Apparently there was only one quantitative method for measuring the resistance of fabrics against insect pests, by employing the weight of the frass or excrement as a measure of this resistance. This method was described by C. H. Stiteler in 1938.[1] The committees, therefore, decided to use this method as a basis for the proposed standardized test. The original report on this test method was relatively devoid of details, hence a cooperative research program was instituted to answer many of the problems involved.

The testing program for 1941 attempted to determine (1) the ideal type of test fabric; (2) the best type of test cage; (3) the number and size of the test larvae in relation to the size of the test specimen; (4) the position of the larvae in relation to the test specimen during the test period; and (5) the value of starvation checks, that is, tests with larvae but without cloth specimens.

Nineteen laboratories distributed throughout the three associations participated in this test program. The tests were run in quadruplicate, and they were conducted according to the tentative frass weight test method published in the A.A.T.C.C. 1941 yearbook.[2] All experiments were conducted on the larva of the black carpet beetle, *Attagenus piceus* Oliv. The data as presented in this paper are averages of results from the various laboratories.

Standard Test Fabric

One of the first problems in connection with the standardization of a fabric pest deterrent test procedure lies in the selection of the proper type of test fabric. At the suggestion of the A.A.T.C.C. and A.S.T.M., the following fabric was selected as a tentative standard for all subsequent tests. This cloth was Botany style No. 315 broadcloth, which is 100 per cent wool, 10 ounces per running yard, 54 to 56 inches wide, 47 picks per inch, and 71 ends per inch. This fabric is also bleached to a fairly good white color, and it has less than 0.5 per cent grease as shown by ether extraction. This cloth may be purchased from the Secretary of the A.A.T.C.C., at the Lowell Textile Institute, Lowell, Mass. Larvae of both the webbing clothes moth, *Tineola biselliella Hummel*, and the black carpet beetle, *A. piceus*, feed very readily on this fabric. Treated and untreated specimens of the standard test cloth should always be run in conjunction with other types of fabrics that may be under test, as a check on the test insects.

Comparison of Test Cages

A great variety of test cages was used in these cooperative tests, such as petri dishes, tin salve boxes, crystallizing dishes, Stender dishes, wide-mouth glass jars, cardboard boxes, and the Gooch crucible-type test cage. Some laboratories used closed containers, others employed open ones, while a few preferred those with screen tops. In comparing the results from the various laboratories no significant differences could be observed that might be attributed to the type of test cage. These tests, however, were conducted on untreated cloth, and differences due to the actions of fabric pest deterrent treatments were not evident. Repelling and fumigating deterrents have entirely different effects on test larvae in

A report on cooperative fabric pest-deterrent tests*

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* Prepared for publication by Mr. Fletcher, Chairman, Mothproofing Committee, Natl. Assn. of Insecticide & Disinfectant Mfrs.

[1] C. H. Stiteler, "A Larvae Test for Moth Resistance of Mohair Piled Fabrics," Am. Dyestuff Reporter (25): 729-32 (1938).

[2] "Tentative Method of Test for Resistance of Fabrics and Yarns to Insect Pests," A.A.T.C.C. 1941 Yearbook, pp. 269-71. Also Soap *16* (10): 97 (1940).

[3] R. E. Heal, "Evaluating Protection of Fabrics from Clothes Moth and Carpet Beetle Attack," Jour. Econ. Ent. *35* (2): 249-55 (1942).

[4] Through the courtesy of the General Dyestuff Corporation.

TABLE 1
Frass Weight in Relation to Size of Test Fabric and Number and Size of Black Carpet Beetle Larvae

	1 sq. in. of cloth (1" x 1")			4 sq. in. of cloth (2" x 2")		
No. of larvae	*Aver. wt. of larvae in mg.*	*Wt. of frass in mg.*	*Av. wet. of frass per larva in mg.*	*Aver. wt. of larvae in mg.*	*Wt. of frass in mg.*	*Av. wt. of frass per larva in mg.*
5	2.5	9.7	1.9	2.3	10.1	2.1
	5.7	15.5	3.1	5.3	14.8	2.9
	7.9	14.2	2.8	8.2	13.5	2.7
10	2.4	18.0	1.8	2.9	18.8	1.9
	5.3	30.6	3.1	5.6	27.0	2.7
	7.7	30.3	3.0	7.5	29.1	2.9
15	2.2	25.3	1.7	2.5	27.7	1.8
	5.5	43.6	2.9	5.4	41.2	2.7
	7.8	47.0	3.1	7.2	38.2	2.5

TABLE 2
Effect of Size of Test Specimen on Frass Weight

	Size of Cloth				
10 larvae per test	*One piece 1" x 1"*	*One piece 2" x 1"*	*Two pieces 2" x 1"*	*One piece 2" x 2"*	*No cloth*
Av. wt. of frass in mg.	30.6	30.9	32.9	27.0	1.6

closed as compared to open cages. Therefore, a low, open or screen-top cage is recommended for general use because of better ventilation possibilities.

Frass Weight in Relation to Test Fabric and Number and Size of Test Larvae

One of the most important considerations in testing fabric protectors is the density of the larval population with respect to the test specimen. Table 1 shows the average results of 5, 10, and 15 larvae per test on two different sizes of specimens, 1 and 4 square inches respectively. It is interesting to note that there was approximately the same amount of feeding per larva, regardless of the number of larvae or the size of the cloth. Judging by frass weight, crowding was not evident. Therefore, the number of larvae per test is necessarily arbitrary and should be chosen for the advantages that a given number offers. Five is entirely too small a number to compensate for mortality or pupation, which sometimes occurs during the course of the test. This is not true with 10 larvae per test. Ten also has an added advantage in ease of calculating results. Fifteen larvae per test is statistically better than either 5 or 10, but more time is required not only in checking tests but also in the maintenance of larger cultures. Since all tests are run in quadruplicate, 10 larvae per test or 40 per series seems to be an ideal number.

In regard to size of larvae, small ones ranging below 4 mg. in weight do not feed as much per larva as larger ones. According to the results in Table 1, larvae averaging around 5.5 mg. are ideal because they are very active feeders. Larvae larger than this feed no more per larva and are subject to pupation, especially in the spring of the year.

Comparison of Untreated Cloth Specimens of Various Sizes as Indicated by Frass Weight

Using frass measurement as a basis for comparison, no significant difference was shown between the various sizes of test specimens (see Tables 1 and 2). Factors other than frass seem to indicate in general that fabric specimens of small size are more desirable for testing than larger ones. A cloth sample 2" by 2" is considerably larger than is necessary. The 1" by 1" sample conserves cloth but the properties of a given test chemical, such as odor, stain, etc., may be obliterated by the feeding of the test larvae. The 2 square inch specimen (2" by 1") offers more opportunity for feeding than the 1" by 1" sample, and yet it furnishes a large enough sample so the physical effects of the deterrent on the cloth can be checked at the end of the test period. Some laboratories suggested the use of the sandwich type of test specimen, that is, two cloths one on top of the other, because of more varied opportunity for larval feeding. The cooperative tests showed no significant advantage either in the treated or in the untreated samples of the sandwich specimens over the single ones in this respect. Also, the extra labor involved in preparation as well as in checking makes the use of the sandwich type of specimen of doubtful value.

Position of Larvae in Respect to Untreated Cloth During Test Period

The feeding habits of black carpet beetle larvae with respect to their positions in being either on, off, or under the cloth were observed, and counts were made every week for four weeks of testing. The 1" by 1", 2" by 1", 2 (2" by 1"), 2" by 2" cloths were used with 5, 10, 15 larvae for each size of cloth. These figures were converted into larvae per square inches as shown in Graph 1 for percentages on, off, and under the cloth. These figures show very definite relationships. The percentage of larvae on the cloth remains at a relatively constant low level, ranging between 12 and 15 per cent. The percentages off and under the fabric were in direct ratio to each other, with the number off varying between 4 and 25 per cent, while the number under varied from 63 to 83 per cent. The greater the number of larvae per square inch the smaller the number of larvae under and the greater the number off, and vice versa. Incidentally, these figures tend to show that the Gooch crucible type of test cage does not permit ample opportunity for normal feeding activities, since the larvae are forced to feed on the upper surface of a cloth specimen.

Starvation Checks

For the past two years a great number of starvation checks have been run in connection with the cooperative tests. Starvation checks are tests em-

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TABLE 3

Comparison of the Frass and Fabric Weight Loss Methods for Measuring the Resistance of Treated and Untreated Cloth to the Larva of the Black Carpet Beetle

Test Method	*Test Period*	*% and/or Av. Wt. in mg.*	*Untreated Cloth*		*Treated Cloth**	
			1 sq. in.	*2 sq. in.*	*1 sq. in.*	*2 sq. in.*
Frass measurement by weight	First 2 weeks	Wt.	18.8	17.5	2.5	2.8
		% of total	65.2	59.5	81.8	85.5
	Second 2 weeks	Wt.	10.1	11.8	0.6	0.5
		% of total	34.8	40.5	18.2	14.5
	Total 4 weeks	Total wt.	28.9	29.4	3.1	3.4
Loss in weight of cloth	First 2 weeks	Original wt.	28.4	25.4	2.5	1.4
		Original % of total	60.3	55.0	64.0	42.0
		Adjusted wt.	29.0	27.5	4.6	5.2
		Adjusted % of total	59.7	55.0	92.0	100
	Second 2 weeks	Original wt.	18.7	21.5	1.4	1.9
		Original % of total	39.7	45.0	36.0	58.0
		Adjusted wt.	19.6	22.4	0.4	+0.2
		Adjusted % of total	40.3	45.0	8.0	0.0
	Total 4 weeks	Original wt.	47.1	46.9	3.9	3.3
		Adjusted wt.	48.6	49.9	5.0	5.0

* Pentachloro-dihydroxy triphenyl methane, sulfonic acid.

ploying larvae without a cloth specimen. The purpose of such a check is to get some idea of the amount of frass that the test larvae would normally produce irrespective of their feeding on a test specimen. The average amount of frass produced in all starvation tests was 1.6 mg. (see Table 2). It seems logical that such an amount could be deducted from a given test, thereby giving a better picture of the actual amount of feeding on a given test specimen.

During the past year a new quantitative method for measuring the resistance of fabrics to insect pests was offered by R. E. Heal.[3] This method, which utilizes the loss in fabric weight in evaluating fabric pest deterrents, offers some very interesting possibilities since the method can be used for tests against any type of fabric pest.

In comparing the above method with the frass weight method the following problems were studied during the spring of 1942: (1) the comparison of the resistance of different sized samples of treated and untreated fabric to black carpet beetle larvae; (2) the comparison of the results at the end of a two-week test period as compared to those at the end of four weeks. The same general test procedure employed in 1941 was used in this series of tests, with only the average results being reported. The treated test samples were impregnated with 2 per cent pentachloro-dihydroxy triphenyl methane, sulfonic acid. A large cloth sample was prepared[4] and test specimens were distributed to the individual laboratories so that all tests could be made on the same cloth. Seven laboratories cooperated in this series of tests.

Comparison of Results from Two Quantitative Methods for Evaluating Fabric Pest Deterrents

In general both the frass weight and the fabric weight loss methods for evaluating fabric protectors indicate the same general trends in regard to the feeding or damage produced by black carpet beetle larvae as shown in Table 3. As might be expected in the fabric weight loss method, the change in milligrams was somewhat higher than that shown by the frass weight. The results from both methods showed that there was no difference in the results on the 1″ by 1″ as compared to the 2″ by 1″ size of test specimen. In the frass weight test procedure untreated cloth gave about 28 to 29 mg. of frass, while the treated cloth gave only a little over 3 mg. of frass. According to this test the fabric pest deterrent is a good one since the weight of the frass was less than 6 mg. By comparison, the untreated cloth lost 48 to about 50 mg. of weight while the treated samples only lost 5 mg. Thus, according to the fabric weight loss method of evaluating insect damage, this fabric pest deterrent is very good since it lost less than 8 mg.

Both methods of evaluating pest damage have their own advantages and disadvantages. The test procedure employing the use of the weight of the frass is a rather easy, and in many

respects a quite accurate way of evaluating fabric pest deterrents since changing humidities do not affect the weight of the frass to any great extent. It is a rather tedious job to free all the frass from the test specimen and test cage; however, a careful worker should have no difficulty in this respect. The use of frass weight is a very indirect method for determining the effectiveness of pest deterrents, since larvae may shear off nap and not necessarily eat all of it. Also, larvae may eat their own cast skins or even dead larvae, thus producing a definite source of error in evaluation. One of the chief objections to the use of this method of test is that it can be used only for carpet beetle larvae. This is very unfortunate since clothes moths may be and often are more important as fabric pests.

The use of loss in fabric weight as a measure of the value of a fabric pest deterrent has one very distinct advantage over the frass weight measure in that it can be used in tests employing all species of fabric pests. This is a very important point when considering the standardization of test procedures. This method, however, has one serious disadvantage in that humidity changes definitely affect cloth weight. In order to secure satisfactory results from this type of test procedure all weighings should be made in a constant temperature and humidity room. Through the use of suitable check tests both on treated and on untreated specimens, variations in weights due to humidity changes can be adjusted. This process, however, is rather time consuming. Such adjustments were made in regard to the results as shown in Table 3. Two weighings are necessary in this test procedure, one before and one at the end of the test period. Only one weighing, however, is required in the frass weight procedure, which is a distinct saving in time. Loss in fabric weight is a direct measure of the damage produced by fabric pests as compared to frass weight and thus may indicate more correctly the true value of fabric pest deterrents.

Evaluation of Damage to Fabric by Black Carpet Beetle Larvae

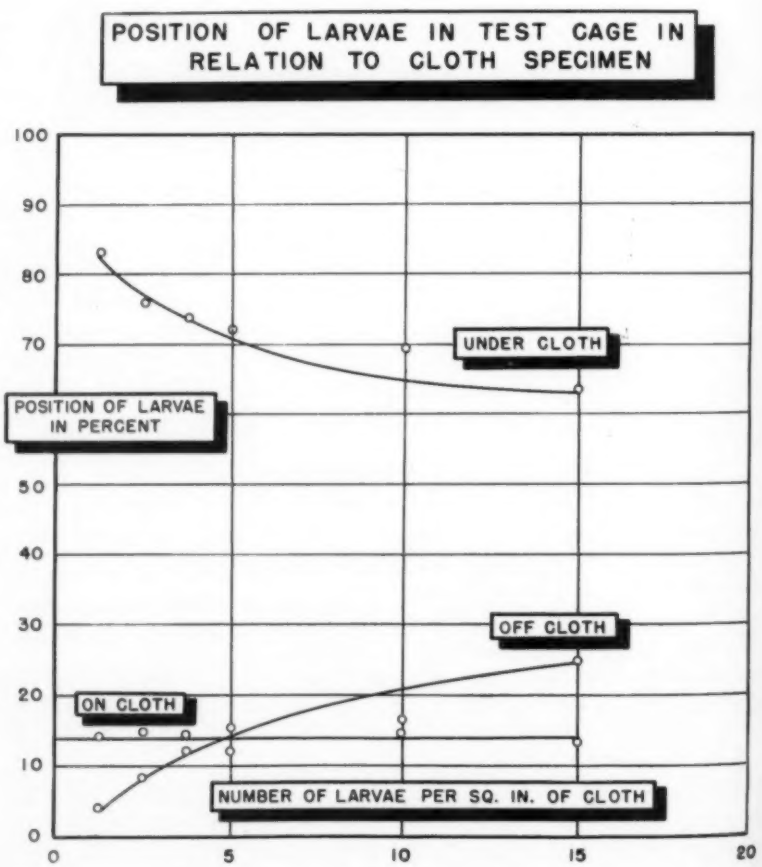
In comparing the damage produced by black carpet beetle larvae for 2- and 4-week test periods, both frass weight and loss in weight of cloth measurements were taken. The data covering these tests are given in Table 3. Tests employing untreated fabrics demonstrated that 55 to 65 per cent of the feeding took place during the first 2 weeks of a 4-week test period. With the treated fabric in this test, 85 to 100 per cent of the feeding occurred during the first 2-week period. The fabric pest deterrent employed in these tests was a stomach poison which incapacitates the larvae in 2 weeks, thereby reducing the feeding greatly during the next 2 weeks of a 4-week test period. Mortality tests taken at the end of 2 weeks on the treated cloth show only 18-22 per cent dead, while at the end of 4 weeks 78-87 per cent were killed (see Table 4). This shows the necessity of conducting tests on black carpet beetle larvae for at least 4 weeks in order to determine the actual physiological actions of a given fabric pest deterrent on the test larvae. A 4-week test period also gives test

TABLE 4
Mortality of Black Carpet Beetle Larvae as Affected by Length of Exposure to Treated* Fabric
Percent Mortality

Size of treated cloth	*2 wks.' exposure*	*4 wks.' exposure*
One piece 1"x1"	18	78
One piece 2"x1"	22	84

* Treated with pentachloro-dihydroxy triphenyl methane, sulfonic acid.

GRAPH I



chemicals more opportunity to break down than a 2-week period.

Comparative Values by Visual Observation, Frass Weight, and Fabric Weight Loss Methods for Determining Resistance of Fabric to Black Carpet Beetle Larvae

A comparison of the three most common methods for evaluating the resistance of fabric to insect pests is quite interesting. In general these three methods agree quite well as outlined in Table 5. Visual analysis of feeding is naturally a very arbitrary and qualitative method for determining the resistance of fabrics to insect pests and is, therefore, not suitable as a standardized test method. The two quantitative methods, namely, frass weight and fabric weight loss methods, are not quite in agreement in regard to the upper limits of satisfactory resistance of fabrics to insect pests. Judging from the results of feeding tests on the standard test fabric, 4 mg. of frass and 8 mg. loss in cloth weight would be more nearly comparable. It is striking to note, in the comparative values of Table 5, that fabric weight loss is about twice the weight of the frass. Since loss in fabric weight is a direct method for measuring the resistance of fabrics to insect pests, as compared to frass weight method, a greater weight figure is to be expected. During the feeding process of fabric insects, for instance, much of the consumed wool is lost through metabolism. Also, the sheared nap and small isolated cloth fragments are undoubtedly evidences of damage which are not accounted for in frass weight. It seems then that fabric weight loss offers the most accurate representation of the actual damage produced by fabric pests.

TABLE 5

Comparative Values by Visual Observation, Frass Weight, and Fabric Weight Loss Methods for Determining Resistance of Fabric to Black Carpet Beetle Larvae

Frass Wt. in mg.	*Loss in Weight of Cloth in mg.*	*General Rating by Visual Observation*
0 -1.5	0	Excellent—no apparent feeding.
1.6-2.5	0.1-5.0	Good—minimum detectacle amount of feeding on nap and warp.
2.5-10.0	5.0-20.0	Fair—slight feeding on nap and warp.
10.0-20.0	20.0-40.0	Poor—medium feeding on nap and warp.
20.0 and up	40.0 and up	Very poor—very heavy feeding on nap and warp.

Summary and Conclusions

The A.A.T.C.C., A.S.T.M., and the N.A.I.D.M. instituted a cooperative research program to standardize a procedure for testing fabric pest deterrents. The quantitative test employing the use of the weight of the frass as a measure of the resistance of fabrics to insect pests was used as starting point for the testing program. This test procedure was later compared with the fabric weight loss method for determining fabric pest resistance. The following is a summary of the results and conclusions:

1. Botany style No. 315, 100 per cent wool broadcloth was selected as the standard test fabric.

2. A low, open-type metal or glass test cage is recommended for use.

3. The standard number of insects per test shall be 10.

4. Black carpet beetle larvae ranging in weight between 4.5 to 6.5 mg. are recommended as ideal for testing purposes.

5. The sizes of the cloth specimens under test had no appreciable effect on larval feeding. On the basis of other considerations, however, a specimen containing 2 square inches of cloth seems most desirable.

6. Sixty-three to 83 per cent of the larvae were under, 12 to 15 per cent on, and 4 to 25 per cent off the untreated test specimen during a 4-week test period. The number of larvae off a cloth specimen varies indirectly and the number under directly, while the number on does not vary with the size of a test specimen.

7. Comparisons of the frass weight with the fabric weight loss methods for evaluating fabric pest deterrents were made. Both methods have advantages and disadvantages. The weighing of the frass is an indirect means of evaluating fabric pest deterrents. This is a relatively accurate method for evaluation, unaffected by humidity changes but applicable only to black carpet beetle larvae. Loss in fabric weight is a direct means of evaluating fabric pest deterrents. It can be used in tests against all types of fabric pests but is greatly affected by humidity changes.

8. The feeding or damage caused by black carpet beetle larvae at the end of 2 weeks and that at the end of 4 weeks were compared. These tests showed that approximately 60 per cent of the feeding on untreated cloth and 90 per cent of that on the cloth treated with pentachloro - dihydroxy triphenyl methane, sulfonic acid was accomplished at the end of two weeks. Mortality counts, however, show that only 20 per cent of the larvae in treated samples were dead at the end of two weeks as compared to 80 per cent at the end of the four-week period. Assuming that the chief function of a fabric pest deterrent is the prevention of feeding, the two-week test period is sufficient. If the complete action of a toxicant in regard to the insect is to be secured, at least four weeks are necessary.

9. An average figure of 1.6 mg. for the amount of frass produced in four weeks by ten black carpet beetle larvae was established for starvation checks.

10. Comparative values of visual observation, frass weight, and fabric weight loss methods for determining resistance of fabric to the black carpet beetle are given, and, in general, they agree quite well. The visual analysis method is arbitrary. Loss in weight of cloth is about twice the weight of the frass.

increased toxicity with ROTENONE DUSTS

E. J. CAMPAU, H. F. WILSON, AND R. L. JANES

GREENHOUSE and field tests at the Wisconsin Agricultural Experiment Station indicate that when certain types of oil are added to mixed rotenone dusts, increased toxicity to the pea aphid is developed. SAE10 lubricating oil was used as a standard for comparison, and unless otherwise designated, the term "oil" in this discussion refers to this material. It has also been found that certain other chemical compounds of an oily nature seem to give increased toxicity when added to these dusts. The extent to which this may occur is not yet known because if 4 per cent SAE10 lubricating oil is added to a mixed rotenone dust the increase in control is similar to that obtained by the addition of 2 per cent SAE10 and 2 per cent of the added chemical.

The average control of the pea aphid in the greenhouse with dusts containing "Pyrax" and .1 per cent rotenone activated with 2 per cent SAE10 lubricating oil has been approximately 90 per cent. The average control for a large series of dusts containing .1 per cent rotenone but no oil has been less than 50 per cent. The average control for three separate tests with 4 per cent SAE10 and .05 per cent rotenone was 91 per cent and the average for three tests with .05 per cent rotenone with 2 per cent SAE10 was 18 per cent. It can therefore be shown that oil increases the toxicity of mixed dusts containing low concentrations of rotenone.

Several types of SAE10 lubricating oil have been tested but up to now no significant differences have been found.

The data for the most part are based only on single tests and as such are not significant for any one material. However, a sufficient number of tests have been made with a group of similar acting materials to give strong indications as to what may be expected when one of these materials is added. Because of the small amount of rotenone likely to be available in 1943, and the possibility that one or more of the best adjuvants may be helpful and available, it seems desirable at this time to present the accumulated data. It is hoped that other investigaors will find time to test some of the so-called adjuvants in 1942.

There is also an important point that needs to be studied at an early date and that is the probable deterioration in rotenone by all materials that seem to produce increased toxicity. We have some data to show that dusts made with oil deteriorate in rotenone content over a period of time and that dust combinations over six or more months old are inferior to newly mixed dusts. A loss was indicated in a series of dusts containing 1 and 2 per cent oil mixed in May, 1941. These were analyzed by chemists of the Bureau of Entomology and Plant Quarantine in April, 1942, and showed a definite reduction from the original amount of rotenone. However, other samples which indicated deterioration in greenhouse tests appeared to have their original toxicity when reconditioned with 2 per cent SAE10 oil. We do not know what changes may have occurred, but before reconditioning, the dusts were dry in texture. Added oil created an oily texture. It has been suggested that the drying of the oil had the effect of masking the action of the rotenone. Additional studies are needed to settle the question.

Ninety-six different chemical compounds have been tested in a preliminary way in the greenhouse with .1 per cent rotenone but not all of these have been used in dusts conditioned with SAE10 oil. Field tests made this spring showed that a dust made with .1 per cent rotenone and 2 per cent propylene laurate and 2 per cent SAE10 oil appeared better than a dust prepared with .1 per cent rotenone and 4 per cent SAE10 oil.

Some of the materials which gave increased control with rotenone and SAE10 oil will be available in 1942 and may still be available in 1943.

The regular laboratory procedure of mixing the dust in 25-gram lots was followed for all tests. "Pyrax" was used as the dispersing agent. Ground cubé, purchased in 1941 and containing 4.86 per cent rotenone, was mixed with the "Pyrax" in a mortar with a hand pestle until the mix appeared complete. Then 2 per cent oil and 2 per cent of the adjuvant was added by means of a dropper and the mixing continued until no aggregates could be found after passing a 30-mesh screen. One-half gram lots of dust were then applied to individual plants approximately six inches high inside a bell jar. The dusts were blown through a laboratory dust ejector against the curved top of a bell jar to spread the dust stream and force it downward around the plant. Each plant was infested with 20 adult aphids and three plants were used for each test so that the data is based on a total of 60 aphids for each treatment.

As soon as the dusts were applied, each plant was covered with a 20-mesh screen cage and set in the greenhouse where the temperature ranged from 64-70°F. The number of dead aphids was checked at 24-hour periods up to 72 hours. Because some aphids, although unable to move, still showed signs of life by movement of legs and antennae, the per cent control

is based on the number of aphids still in good condition and on the plants. The data is given in the accompanying tables:

TABLE I

A series of chemicals compared to determine their possible value as adjuvants in rotenone dusts, with and without SAE10 lubricating oil. One-tenth per cent rotenone was used in each test.

Material	% *SAE10*	*% control in 72 hrs.*
Abopon—liquid	2.0	48
Abopon—liquid	None	75
Glyco Products Co., Inc. Complex sodium borophosphate		
2-Amino-2-Methyl-1-Propanol—liquid.	2.0	12
2-Amino-2-Methyl-1-Propanol—liquid.	None	3
Commercial Solvents Corporation Fatty acid salts of named compound		
Amyl Acetate—liquid	2.0	22
Amyl Acetate—liquid	None	0
CPO—liquid	2.0	38
CPO—liquid	None	0
Crystal Soap & Chemical Co., Inc. Composition not given		
Emulphor ELA—liquid	2.0	95
Emulphor ELA—liquid	None	97
General Dyestuff Corporation Ethylene oxide and organic acid		
Emulsifier (W-763-A)—liquid	2.0	95
Emulsifier (W-763-A)—liquid	None	2
Jacques Wolf & Company Sodium naphthenic sulfonate		
Evener No. 1 (936)—liquid	2.0	85
Evener No. 1 (936)—liquid	None	10
Hercules Powder Company Soluble compound with sulfonated oil base plus mixture of alcohols.		
Evener No. 25-2 (936)—liquid	2.0	100
Evener No. 25-2 (936)—liquid	None	7
Hercules Powder Company Soluble compound with sulfonated oil base plus mixture of alcohols.		
Glyceryl Laurate S—liquid	2.0	98
Glyceryl Laurate S—liquid	None	5
Glyceryl Laurate S—liquid	2.0	85
Glyceryl Laurate S—liquid	None	20
Glyceryl Laurate S—liquid No rotenone	2.0	22
Glyco Products Co., Inc.		
Glyceryl Monoricinoleate—liquid	2.0	95
Glyceryl Monoricinoleate—liquid	None	56
Glyco Products Co., Inc.		
Glyceryl Oleate No. 4145—liquid	2.0	100
Glyceryl Oleate No. 4145—liquid	None	93
Glyco Products Co., Inc.		
Igepal—CTA—liquid	2.0	85
Igepal—CTA—liquid	None	23
General Dyestuff Corporation Composition not given.		
Igepon AP—powder	2.0	2
Igepon AP—powder	None	0
General Dyestuff Corporation Oleic acid ester of an aliphatic compound		
IN-181-P—powder	2.0	10
IN-181-P—powder	None	2
E. I. Du Pont de Nemours & Co., Inc. Sodium lauryl sulfate and inert powder.		
IN-834A-7—liquid	2.0	100
IN-834A-7—liquid	None	72
E. I. Du Pont de Nemours & Co., Inc. Composition not given.		
Pure Powdered Karaya No. 1AXS	2.0	68
Pure Powdered Karaya No. 1AXS	None	0
Jacques Wolf & Co.		
Pure Powdered Karaya No. 1A	2.0	12
Pure Powdered Karaya No. 1A	None	7
Jacques Wolf & Co.		
Invidine B—powder	2.0	0
Invidine B—powder	None	0
Ciba Co., Inc. Alkylnaphthalenesulfonate derivative		

TABLE I (*continued*)

Material	% *SAE10*	*% control in 72 hrs.*
Lethane 384—liquid	2.0	98
Lethane 384—liquid	None	38
Rohm & Haas Co.		
Loupole—W950—liquid	2.0	73
Loupole—W950—liquid	None	3
Jacques Wolf & Co. Sulfonated oils and solvents		
Lupomin W-1300-B—powder	2.0	65
Lupomin W-1300-B—powder	None	20
Jacques Wolf & Co. A fatty acid ester		
Methyl-n-amyl Ketone—liquid	2.0	93
Methyl-n-amyl Ketone—liquid	None	53
Carbide and Carbon Chemical Corp.		
Naccolene F—liquid	2.0	43
Naccolene F—liquid	None	2
National Aniline & Chemical Co., Inc. Alkyl aryl sulfonate		
Naf-Sol—liquid	2.0	28
Naf-Sol—liquid	None	10
Dr. Andre Laboratory Milwaukee, Wisconsin		
Orvus—powder	2.0	58
Orvus—powder	None	3
Procter and Gamble Co. Sodium Lauryl Sulfate		
Penatrol 65—liquid	2.0	72
Penatrol 65—liquid	None	0
Beacon Company Composition not given		
Peregal O—liquid	None	0
Peregal O—liquid		
General Dyestuff Corporation		
Propylene laurate—liquid	2.0	100
Propylene laurate—liquid	None	98
Propylene laurate—liquid	2.0	100
Propylene laurate—liquid	None	85
Propylene laurate—liquid	2.0	92
Propylene laurate—liquid	None	10
Glyco Products Corp.		
Stantex Dispersing Oil—R-50—liquid	2.0	100
Stantex Dispersing Oil—R-50—liquid	None	63
Standard Chemical Products Co.		
Score No. 1A—liquid	2.0	83
Score No. 1A—liquid	None	38
Specialty Products Co.		
Solvadine NC—liquid	2.0	48
Solvadine NC—liquid	None	2
Ciba Co., Inc. Alkylated aryl sulfonate		
Sulfo Turks—liquid	2.0	77
Sulfo Turks—liquid	None	12
Glyco Products Co., Inc. Modified sulfonated hydrocarbon, sodium salt		
Sulphonated Castor Oil—50 per cent	2.0	68
Sulphonated Castor Oil—50 per cent	None	0
L. Sonneborn Sons, Inc.		
Tergitol Penetrant 7—liquid	2.0	98
Tergitol Penetrant 7—liquid	None	55
Carbide and Carbon Chemical Corp. Sodium sulfate of a higher synthetic secondary alcohol		
Tergitol Penetrant 08—liquid	2.0	98
Tergitol Penetrant 08—liquid	None	0
Carbide and Carbon Chemicals Corp. 40 per cent Sol. of sodium 2-ethyl hexyl sulfate in water		
Tetra Sodium Phosphate—powder	2.0	12
Tetra Sodium Phosphate—powder	None	13
Victor Chemical Works		
Trigamine—liquid	2.0	5
Trigamine—liquid	None	8
Glyco Products Co., Inc. Chemical composition not given		

LETHANE

Developed in America from American Materials

★ Fifteen years ago Rohm & Haas Company's chemists started to develop a synthetic organic insecticide made wholly from raw materials produced in America. Out of their research LETHANE was born in 1930, and with each intervening year its merit has been more fully established.

As the foremost synthetic organic insecticide on the American market, LETHANE stands ready today to relieve in large measure the shortage in botanicals which has been created by the war.

This is another example of how American industrial research and development carried out in years past comes to the aid of the American people in these critical times.

LETHANE IS A TRADE MARK, REG. U. S. PAT. OFF.

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WASHINGTON SQUARE, PHILADELPHIA, PA.

Manufacturers of Leather and Textile Specialties and Finishes . . Enzymes . . Crystal-Clear Acrylic Plastics . . Synthetic Insecticides . . Fungicides . . and other Industrial Chemicals

TABLE I (*continued*)

Material	% SAE10	% control in 72 hrs.
Triton NE (No. 1)—liquid	2.0	94
Triton NE (No. 1)—liquid	None	22
Triton NE (No. 1)—liquid	2.0	92
Triton E-79—liquid	2.0	40
Triton E-79—liquid	None	0
Triton 720 (No. 1)—liquid	2.0	49
Triton 720 (No. 1)—liquid	None	39
Rohm & Haas Co., Inc. Sulfonated ethers		
Vatsol OT—solid	2.0	82
Vatsol OT—solid	None	7
American Cyanamid & Chemical Corp. A dioctyl ester of sodium sulfo succinate		
Wetanol—powder	2.0	93
Glyco Products Co., Inc. Modified sulfated fatty acid ester		
Yarmor Pine Oil No. 41-307—liquid	2.0	73
Yarmor Pine Oil No. 41-307—liquid	None	42
Hercules Powder Co. A pine oil fraction; contains terpene alcohols and terpene hydrocarbons.		

TABLE II

A list of chemicals compared to determine their possible value as adjuvants in rotenone dusts with and without oil. Five one-hundreds per cent rotenone was used in each test.

Material	% SAE10	% Dead
Derex—rotenone free—liquid	2.0	92
Derex—rotenone free—liquid	None	17
U. S. Industrial Chemical Co.		
Derex Standard—liquid	2.0	95
Derex Standard—liquid	None	12
U. S. Industrial Chemical Co.		
Dibutyl Phthalate—liquid	2.0	90
Dibutyl Phthalate—liquid	None	67
The Beacon Company		
Loro—liquid	2.0	97
Loro—liquid	None	70
E. I. Du Pont de Nemours & Co. Lauryl thiocyanate		

TABLE II (*continued*)

Material	% SAE10	% Dead
Methyl Cyclohexane—liquid	2.0	0
Methyl Cyclohexane—liquid	None	2
E. I. Du Pont de Nemours & Co.		
N Dodecanoic (Lauric) acid—powder.	2.0	97
N Dodecanoic (Lauric) acid—powder.	None	5
E. I. Du Pont de Nemours & Co.		
N Dodecyl (Lauryl) alcohol—liquid..	2.0	0
N Dodecyl (Lauryl) alcohol—liquid..	None	3
E. I. Du Pont de Nemours & Co.		
N. Dodecyl (Lauryl) chloride—liquid.	2.0	10
N. Dodecyl (Lauryl) chloride—liquid.	None	2
E. I. Du Pont de Nemours & Co.		
Propylene Laurate—liquid	2.0	98
Propylene Laurate—liquid	None	72
Propylene Laurate—liquid	2.0	100
Propylene Laurate—liquid	None	27
Propylene Laurate—liquid	2.0	98
Propylene Laurate—liquid	2.0	97
Beacon Company		
Prolaurin—liquid	2.0	72
Prolaurin—liquid	None	72
Glyco Products Co.		
Glyceryl Laurate S—liquid	2.0	88
Glyceryl Laurate S—liquid	None	8
Glyceryl Laurate S—liquid	2.0	45
Glyceryl Laurate S—liquid	2.0	72
Glyco Products Co.		
Diglycol Laurate—liquid	2.0	75
Diglycol Laurate—liquid	None	73
Glyco Products Co.		
Sorbitol Laurate—liquid	2.0	32
Sorbitol Laurate—liquid	None	25
Glyco Products Co.		
Triton NE—liquid	2.0	98
Rohm & Haas Co.		
Glyceryl (Monoricinoleate)—liquid	2.0	82
Glyco Products Co.		
Igepal CTA	2.0	80
General Dyestuff Corporation		
IN-2503—liquid	2.0	95
E. I. Du Pont de Nemours & Co. Composition not known		

TABLE III

A comparison of different concentrations of SAE10 lubricating oil and .05 per cent rotenone mixed with Pyrax.

	% Control
Pyrax — .05% Rotenone — no oil	12.
Pyrax — .05% Rotenone + 2% oil.	2.
Pyrax — .05% Rotenone + 2% oil.	8.
Pyrax — .05% Rotenone + 2% oil.	43.
Pyrax — .05% Rotenone + 4% oil.	92.
Pyrax — .05% Rotenone + 4% oil.	93.
Pyrax — .05% Rotenone + 4% oil.	88.
Pyrax — .05% Rotenone + 6% oil.	62.
Pyrax + 2% Propylene Laurate — no oil	2.

Discussion

The data given in this paper indicates that when SAE10 lubricating oil and certain adjuvants are added to rotenone-bearing dusts, consistent increased control with low concentrations of rotenone is obtained. One adjuvant, known as "Abopon," in one test appeared better alone than with SAE10 oil.

The difference between "Emulphor ELA" with and without oil is not considered important except to indicate that 2 per cent of the material was as good as the combined 4 per cent oil and "Emulphor."

When .05 per cent rotenone was used, outstanding increases in toxicity developed with the addition of SAE10 oil. In one field test with four replicated plots, a dust mixture containing .1 per cent rotenone, 2 per cent SAE10 lubricating oil, and 2 per cent propylene laurate showed a control of 90 per cent in 24 hours.

Similar differences appeared when different per cents of SAE10 oil were used as shown in Table III. Three separate tests were made on different dates with 2 and 4 per cent oil with .05 per cent rotenone. These few tests are not necessarily definite but the indications are sufficient to warrant field tests to determine whether or not higher concentrations of oil will make it possible to use low concentrations of rotenone during the period of the war. There may be some difficulty in getting high oil content dusts through low velocity machines, but field tests have shown that with a satisfactory opening from the hopper to the dust chamber, high velocity machines will give satisfactory distribution. We have not experienced any plant injury in the greenhouse or in the field.

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Control of Cattle Grubs

Recent experiments with cubé and derris powders, as now supplied in the more finely ground condition, have shown that the powders mixed with wettable sulfur and applied dry are fully as effective on Texas cattle as when applied as a wash. The powder is not so effective, however, on cattle with such extremely dense coats of hair as occur on some animals in the North. R. W. Wells and E. W. Laake. U. S. Dept. Agr., Bur. Entomol. Plant Quarantine Bulletin E-562, 1942.

Ferric Sulfate Brass Cleaner

Stains on brass, the red copper oxide scale and black smut as well as the scale on brass castings formed by annealing after cold stamping are readily removed by the use of ferric sulfate, according to E. R. Chapin of the Monsanto Chemical Co., Everett, Mass., which company has recently perfected a new process for the commercial production of this material. The advantage of ferric sulfate which is one of the iron sulfates, over chemicals previously used for removing stains from brass is that it acts quickly and with less loss of metal, better preserving the design on the brass. It is also finding use in the treatment of brass cartridge cases prior to drawing. Further information on the new uses of the product may be obtained from Mr. Chapin.

The War Program

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Bibliography

1. Roark, R. C.: Agricultural Products as Insecticides. Indust. & Eng. Chem. 31:168-171 (Feb.) 1939.
2. Haller, H. L., Goodhue, L. D., and Jones, H. A.: The Constituents of Derris and Other Rotenone-bearing Plants. Chemical Reviews 30:33-48 (Feb.) 1942.
3. Shepard, H. H.: The Chemistry and Toxicology of Insecticides. Burgess Publishing Co., Minneapolis, 1939.
4. Definition proposed by Consultant Staff of the Section of Dermatoses Investigations, National Institute of Health.
5. Ayres, J. S., and Anderson, N. P.: Cutaneous Manifestations of Arsenic Poisoning. Arch. Dermat. & Syph. 30:33-43 (July) 1934.
6. Myers, C. N., and Throne, Binford: The Relation of Arsenic to Public Health. New York State J. Med. 29:871-874 (July 15) 1929.
7. Grosa, C. R., and Nelson, O. A.: Arsenic in Tobacco. Am. Jour. Pub. Health 24:36-42 (Jan.) 1924.
8. Barksdale, E. E.: Cutaneous Manifestations from Tobacco with Special Reference to Arsenical Exfoliative Dermatitis. J.A.M.A. 115: 672-676 (Aug. 31) 1940.
9. Weigel, J. E.: Chigger and Jigger Bites. Military Surg. 90:113-224 (Feb.) 1942. (Abs.) J.A.M.A. 119: 374 (May 23) 1942
10. Feinberg, S. M.: Pyrethrum Sensitization. Its Importance in Relation to Pollen Allergy. J.A.M.A. 102:1557-1558 (May 12) 1934.
11. Martin, J. T., Hester, K.N.C.: Dermatitis Caused by Insecticidal Pyrethrum Flowers. Brit. J. Dermat. & Syph. 53:127-142 (May) 1941.
12. Correspondence: Use of Pyrethrum Powder for Insect Control. War Medicine 2:340 (March) 1942.
13. Williams, C. L., and Dreessen, W. C.: A Non-inflammable Pyrethrum Spray for use in Airplanes. Pub. Health Rep. 50:1401-1404 (Oct. 11) 1935.
14. Haag, H. B.: Toxicological Studies of Derris Elliptica and its Constituents; Rotenone. J. Pharmacology and Experimental Therapeutics 43:193-208 (Sept.) 1941.
15. Ambrose, A. M., and Haag, H. B.: Toxicological Study of Derris. Indust. and Eng. Chem. 28:815-821 (July) 1936.
16. Dorne, M., and Feldman, T. B.: Derris Root Dermatitis. J.A.M.A. 115:1268-1270 (Oct. 12) 1940.
17. Racouchat, Jean: Arch. d. mal. profess. 2:149-151 (March) 1939. (Abs.) J. Am. Pharm. Assoc. 29: 454 (Oct.) 1940.
18. Weston, C. G.: Derris Root—A New Allergen. J. Allergy 9:62-63 (Nov.) 1937.
19. Sherrard, G. C.: Five Fumigants for Disinfectation of Bedding and Clothing: A comparative study of insecticidal properties. Pub. Health Reports 57:753-759 (May 15) 1942.
20. Schwartz, Louis, and Warren, L. H.: Dermatitis Caused by a New Insecticide. Public Health Reports 54:1426-1435 (Aug. 4) 1939.
21. Schwartz, Louis, et al.: An Outbreak of Dermatitis from New Resin Fabric Finishes. J.A.M.A. 115:906-911 (Sept. 14) 1940.

Develop "Insect Toximeter"

Entomologists at the New Hampshire Agricultural Experiment Station, Durham, N. H., have developed a device termed an "insect toximeter" for securing uniform application of liquids to all surfaces of test insects used in their studies of contact insecticides. In the station's most recent annual report, this device is described as "utilizing a turn-table of controlled variable speeds, on which is mounted a device for holding a series of insects, each in a similar but separate position. The spray materials are delivered from two air brushes mounted in such a way that the two columns of mist meet at the turn-table and thereby give a uniform coating to all the insects in the experiment. The entire apparatus is mounted within a housing which prevents stray air currents or eddies. An exhaust fan removes the spray mist from the housing at the close of each experiment."

Utilizing this apparatus, an extensive series of studies has been underway, designed to establish the relationship between variations in concentration of a given toxicant and variation in the number of seconds during which the toxicant is applied. The studies are also designed to establish the median lethal dose of materials which can serve as standards, including rotenone, nicotine and pyrethrum.

Efficiency of Hypochlorite

Studies on the germicidal efficiency of hypochlorite solutions were made with a solution prepared from a commercial chlorinated lime, but using spores of *Bacillus metiens* as test organisms. A bacterial suspension was devised which remained constant in population and in resistance to chlorine for eight months.

Families of curves of survival were prepared for varying concentrations, pH values and temperatures. The molecular effectiveness of active chlorine was found to be greatest at low concentrations, that is, the rate of kill increased more slowly than the concentration. Killing was more rapid as the temperature was raised, and as the solution became more acid. There was evidence of a "lag phase" before killing set in. It was also suggested that the killing action is in proportion to the hypochlorite-ion concentration and that whatever drove these ions into the undissociated condition reduced the bactericidal effectiveness. A. S. Rudolph and Max Levine. Iowa State Coll., *Eng. Expt. Sta. Bull.* 150, 48 pp.

Penetration of Insecticides

Penetration of contact insecticides through the cuticle and the resulting lethal action probably depend on the characteristics of the cuticle at the time of treatment. Just after moulting or emergence from the pupa, insect cuticle is softer and thinner than at other times. To test penetration through thin cuticle, newly emerged and older blowflies, *Phormia regina*, were immersed in a mixture containing 1 per cent of pyrethrins, an ester of mannitan and coconut-oil fatty acids. The older flies proved more susceptible, owing perhaps to the lower permeability of the new cuticle or to the lower susceptibility of the nervous system of young flies to pyrethrins. Flies that recovered from pyrethrin paralysis laid fertile eggs. L. D. Anderson and R. A. Hook. *J. Econ. Entomol.* 34, 725-6.

Carpenter Ant Control

Infestations of the black carpenter ant in houses were controlled with a poison paste containing thallium sulfate. Ground derris-root powder was also effective in killing this ant. R. B. Friend. *Pests* 10, No. 2, 12, 14 (1942).

Mothproofing Compound

To make a composition suitable for simultaneous mothproofing and dry cleaning, alcohol carrying salicylic acid and boric acid is mixed with a grease-removing solvent such as gasoline and carbon tetrachloride, in which salicylic acid is normally insoluble. Henry N. Mitchell. U. S. Patent No. 2,267,617.

Bordeaux and Rotenone

Colorimetric and biological tests with goldfish indicated that Bordeaux mixture (4-6-50) containing 0.015 per cent of rotenone sufferred a 20 per cent reduction in rotenone content after 30 days, 40 per cent after 62 days, and 50 per cent after 92 days. Robert A. Fulton and R. H. Nelson. *J. Econ. Entomol.* 34, 647-9.

Fungicide and Moth Preventive

Alpha-Undecyl benzyl chloroacetamide is caused to react with dimethyl amine. The resulting compound is converted into the quaternary compound by dimethyl sulfate. This is a semisolid mass which dissolves in water giving a clear solution. It is used as a moth protecting agent, a bactericide and a fungicide. J. R. Geigy A.-G. Swiss Patent No. 210,-985.

The Tea-tree Oils

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sene. A much more dangerous form of adulteration is the addition of eucalyptus oils, as practised sometimes in Europe and America but not in Boeroe where very little eucalyptus oil is imported. The addition of eucalyptus oil would, of course, increase the cineol content to an abnormally high percentage. A lot of cajuput oil containing, let us say, 70 per cent cineol should give rise to suspicion.

Chemistry of Oil of Cajuput

The following constituents have so far been identified: cineol as main constituent, by Wallach[3] and collaborators;

i-α-terpineol, free and as acetate, by R. Voiry;[4]

valeraldehyde,

benzaldehyde,[5]

propionic acid and valeric acid, by M. Duyster.[6]

D. B. Spoelstra[7] found the following constituents:

l-α-pinene,

l-limonene,

dipentene,

l-α-terpineol,

a mixture of hydrocarbons consisting mainly of bicyclic and some monocyclic hydrocarbons and azulene,

a mixture of sesquiterpene alcohols.

Uses of Cajuput Oil

As pointed out, the natives of Malaya use the oil as a panacea in the treatment of all kinds of diseases—internally as a medicine for stomachic and intestinal troubles, externally for skin diseases. Rubbed on the forehead, it relieves headache, probably because of its cooling effect. Internally it acts as an anthelmintic remedy, particularly effective against round worms. Introduced into a carious tooth, it relieves toothache. In western countries the oil was formerly used internally for rheumatism, but lately it has been recommended as a stimulating expectorant in cases of laryngitis and bronchitis.

According to native belief, it is also a very effective insecticide. Lice and flees (but not ticks) fall off cats and dogs when they are rubbed down with cajuput oil. The oil is also employed in Malaya as a room spray against bedbugs and all kinds of insect pests.

Exports

THE oil lots have in normal times been exported from Namlea, the capital of Boeroe, via Amboina and Macassar, either to Java and the outlying islands or to Singapore, the principal port of transshipment to other countries. According to interregional trade statistics of the outer islands, the annual inter-island shipments of the Dutch Archipelago have averaged about one hundred tons of cajuput oil annually during the last few years.

The quantities shipped to foreign countries during the same period averaged about seventy tons. In former years they were subject to great fluctuations but less so previous to the outbreak of the present war. During 1937 the exports in tons net were as follows:

	Tons
Singapore	43
Holland	6
Great Britain	5
Germany	5
France	3
U. S. A.	2
Other countries	9
TOTAL	73

Of this quantity, more than seventy-one tons was shipped from the outer islands and only a little more than one ton from Java.

The chief port of destination has always been Singapore from where a large part used to be reexported to Indo-China, British India and other parts of the Far East, also to the United States and Europe. The Dutch East Indies have always been the principal customer; they could, in fact, absorb much larger quantities if the price was low enough for the natives to purchase more freely.

Oil of Niaouli

THE niaouli tree, *Melaleuca viridiflora* de Brongn. et Gris., is the second important species of the genus *Melaleuca* (fam. *Myrtaseae*). In regard to chemical constitution as well as medicinal and pharmaceutical value, its essential oil, which in France is also called *gomenol*, closely resembles that of cajuput and can, in fact, be substituted for it.

Melaleuca viridiflora is the characteristic tree of and native to New Caledonia, a French island possession in the Pacific Ocean, about 800 miles off the east coast of Australia. Forming patches and sparsely wooded forests, niaouli trees extend over wide areas covering approximately two-fifths of the island. A hardy and tough plant of great vitality, it flourishes on swampy and rocky soil alike, in the coastal lowlands as well as on mountain slopes up to a thousand feet. Its sturdy, very widespread roots split the

native schist and in a way, prepare the ground for cultivation.

It is almost impossible to exterminate this tree by root pulling or burning because succulent shoots soon reappear from the prolific root system. It quickly invades uncultivated land, and planters consider it a nuisance—also because it is liable to spread bush fires. The tree is quite decorative and occasionally reaches great dimensions; its height is that of the European apple tree. At 25 years of age, a tree is considered old.

The plant blooms in January and June. Its thyrsoid shaped, apple-green buds are sometimes used as a substitute for tea; therefore the popular designation "tea tree" in Queensland, Australia, where the tree was introduced successfully.

Niaouli leaves resemble those of the olive tree in color and those of the rose laurel in shape. They contain up to 2.5 per cent essential oil which, because of its cineol content, is a very powerful disinfectant. In fact, it is claimed that the remarkably healthful climate of New Caledonia is due to the niaouli tree, the ripe, fallen leaves of which cover the ground during certain periods of the year. It would be interesting to investigate this popular claim because, if true, the tree might be valuable in some of the malaria infested sections of Central and South America. The small seed is carried off by the wind, so that the plant easily propagates itself.

Distillation of Niaouli Oil

THERE is no particular center of cultivation; the trees grow profusely over wide areas of New Caledonia. Production of oil is not organized on a modern basis. Labor, which must be imported from Java and French Indo-China, is scarce and relatively high priced. For this reason distillation of the oil has remained a all family industry of the settlers—some of them French, some Asiatic. The children collect the leaf material while older members of the family attend to the actual distilling. Five to six hundred, in some cases about 1,000 kilos of fresh leaves are charged into a still and trampled down; sufficient water is poured in and the contents distilled for about six hours. Most stills are heated with direct fire. The yield of oil varies widely, depending upon climatic and seasonal conditions, location, and general condition of the plant material. On the average, 100 to 150 pounds of fresh leaves yield about one pound of oil containing 67 to 68 per cent of cineol.

The average annual production in New Caledonia during several years previous to the present war was about 20 tons of oil. In the course of several years it has ranged from 10 to 30 tons. The chief center of oil production is around Gomen, from which the French designation for niaouli, *gomenol*, is derived. The oil is exported from Noumea and has normally gone to Marseilles, France, from there being distributed over Europe and also shipped to the United States. The New Hebrides do not produce niaouli oil, but since the war of 1914-18 production has been started on a small scale in French Indo-China.

Physical and Chemical Properties

Shipments of pure oils tested during the last two years fell between the following limits:

Specific Gravity at 15°C.	0.912 to 0.920
Optical Rotation	+0°33′ to +1°18′
Refractive Index at 20°C.	1.4670 to 1.4722
Cineol Content	52.4 to 57.8%
Saponification Value	3 to 5
Solubility at 20°C.	Soluble in 1.0 volume and more of 80% alcohol.
Color	Pale yellow.

Adulteration of Niaouli Oil

As in the case of cajuput oil, oil of niaouli is sometimes adulterated by the addition of kerosene and fatty oils. A more dangerous adulterant is oil of eucalyptus which increases the natural cineol content of niaouli oil to an abnormally high percentage.

Chemistry of Niaouli Oil

The constitution of this oil was investigated by G. Bertrand[8] and R. Voiry.[9] The following constituents have so far been identified:

d-α-pinene; (Oil of cajuput contains the l-modification.)

cineol, the main constituent, 50 to 60 per cent of which occurs in the oil;

an l-rotating compound of the same boiling point as cineol—perhaps l-limonene;

α-terpineol and its valerianates, about 30 per cent of which compounds occur in the oil;

traces of acetates and butyrates;

two aldehydes, one of them perhaps valeraldehyde, the other recalling benzaldehyde in odor.

The disagreeable odor of the crude oil is caused by sulphur-containing compounds.

Uses of Niaouli Oil

Because of its antiseptic properties, the oil is used as a substitute for oil of cajuput and oil of eucalyptus in the treatment of coughs, rheumatism and neuralgia. Internally, it is given by mouth or in the form of intramuscular injections, one part of niaouli oil being diluted with four to ten parts of a sterilized fixed oil. The oil has been recommended also in the treatment of chronic catarrhs of the pulmonary membrane and especially of whooping cough.

Behrens[10] reports on the application of a mixture of 5 grams niaouli oil and 95 grams paraffin oil when building an oleothorax. Morin[11] claims that a solution of 0.5 grams niaouli oil in 100 cc. olive oil retards development of the tuberculosis bacillus. Bernau recommends stronger solutions, ranging from 2 to 4 per cent, for blocking the development of the tuberculosis bacillus and 4 to 10 per cent solutions in case of tuberculosis empyems.

(To Be Concluded)

References

1. "Australian Tea Trees of Economic Value," Bulletin of the Technological Museum, Sydney, 1934.
2. Berichten van de Afd. Handelsmuseum van de Kon. Vereeniging Kolonial Inst. No. 54, 1930.
3. *Liebigs Annalen* 225 (1884), 315; 246 (1888), 776.
4. *Compte. rend.* 106 (1888), 1538—*Bull. Soc. Chim.* II, 50 (1888), 108—*Journ. de Pharm.* V, 18 (1888), 149.
5. *Pharm. Tijdschrift voor Nederlandsch Indie* 2 (1925), 327.
6. *Ibid.*
7. *Chem. Zentralbl.* (1929), I. 3044.
8. *Bull. Soc. Chim.* III, 9 (1893), 432; *Compte. rend.* 116 (1893), 1070.
9. "Contribution à l'étude chimique des huiles essentielles de quelques Myrtacées," Thèse de l'Ecole supèrieure de Pharmacie de Paris, 1888.
10. E. Merk's *Jahresbericht* 46 (1933), 246.
11. *Ibid.*

NEWS...

Announce New Insecticide

Completex Liquid Spray is a new odorless-type liquid household insecticide now being marketed by the Completex Sales Co. of 132 West 43d St., New York. The company is also offering a companion powdered insecticide product. The company states that the product is being offered principally to dairies, food packers, breweries, hotels, restaurants, and other similar users.

Renu Products Move

Renu Products, Inc., manufacturers of soaps, waxes, disinfectants, polishes and chemical specialties, recently purchased and now occupy a five story building at 11-24 31st Avenue, Long Island City, N. Y. This is the third time in 12 years that Renu has had to increase the size of their plant facilities as a direct result of the business growth.

Announce Crystox Development

Shell Oil Co., New York, has just announced development of "Crystox," a new synthetic insecticide raw material made entirely from petroleum. "Crystox" is said to be the result of original research work by P. E. Joyce, a Shell Oil representative in Japan, who started work on development of the product approximately four years ago. Commercial production is awaiting construction of a new plant. It is expected to be available on a commercial scale shortly, and will be offered generally as an insecticide raw material, besides being used by the Shell Oil Co. in its own products. A popular article describing the development of "Crystox" is recorded in the July 1942 issue of *Shell News*.

Velsicol Man in Army

W. E. McCauley, manager of the Insecticide Division of Velsicol Corp., Chicago, a reserve officer in the U. S. Army, has just been called to active duty as a first lieutenant. He is stationed at Camp Edwards, Mass.,

W. E. McCAULEY

with the Amphibian Division. Before joining the Velsicol Corp. in September, 1941, Mr. McCauley was for four years assistant entomologist with the State of Illinois Natural History Survey. No one has been named yet to succeed him at Velsicol.

Buckingham Southern Stocks

Buckingham Wax Company, Long Island City, N. Y., advise that warehouse stocks of their line of waxes and polishes are now maintained in carload quantities in Jacksonville, Fla. and Dallas, Texas. The Carroll Co., 1323 Wall St., Dallas, and Marion H. Davis & Co., 1212 Mary St., Jacksonville, are agents for the sale of "Buckingham" products in their respective territories.

End Monsanto Strike

A four-day strike at the Boston plant of Monsanto Chemical Co. and the New England Alcohol Co. ended July 19. The strike involved 800 workers at the two plants and affected more than 250 New England industries employing 500,000 persons working on war production. Although work was resumed immediately, it was estimated by Saul Wallen, mediation officer of the National War Labor Board, that it would take from 36 hours to four days before chemicals could be produced again, according to information reaching him from the two concerns.

Beware of Philip Kerms

Members of the industry are asked to be on the look-out for one Philip Kerms who uses business cards of the Albee Sanitary Products Company, Boston. Kerms has no connection with Albee, according to officials of that firm, having reportedly left them owing the firm considerable money. Kerms is described as between 38 and 39 years old, short and stout. He is reported wanted under a warrant by the Boston police.

Allocate Bleaching Powder

High-test calcium hypochlorite and chloride of lime were put under complete allocation control by the Director of Industry Operations on July 6. This move was made in an effort to guarantee ample supplies for civilian defense gas decontamination and for essential use of the Army and Navy. Both high-test calcium hypochlorite and chloride of lime are specifically exempted in an amendment to the chlorine order, M-19, by a change in the definition of the products covered.

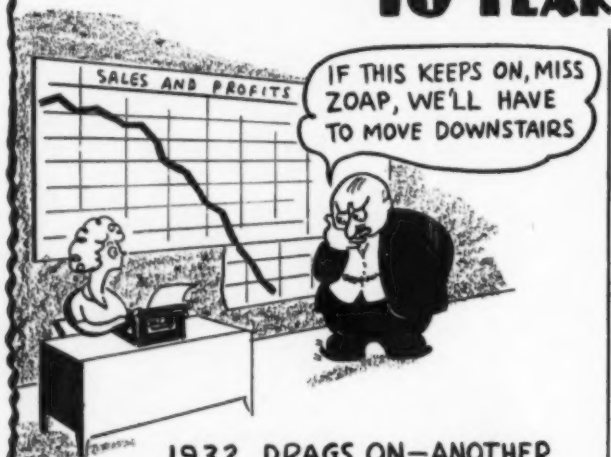
At the same time, Supplementary Order M-19-a was issued, which directed that after July 6, 1942, no high-test calcium hypochlorite or chloride of lime should be delivered by a producer without specific authorization by the Director of Industry Operations. Prior to the beginning of each month, the Director will authorize each producer to make certain shipments of these chemicals during the following month.

Brilco Laboratories Moved

Brilco Laboratories, Inc., manufacturers of insecticides, are now located at 947 61st Street, Brooklyn. The firm moved recently to its new and larger quarters from 530 E. 13th Street, New York City.

REMEMBER?

10 YEARS AGO

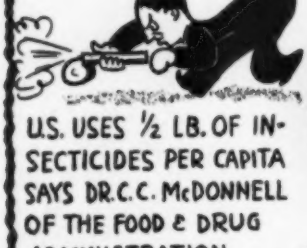


1932 DRAGS ON—ANOTHER DARK YEAR FOR BUSINESS

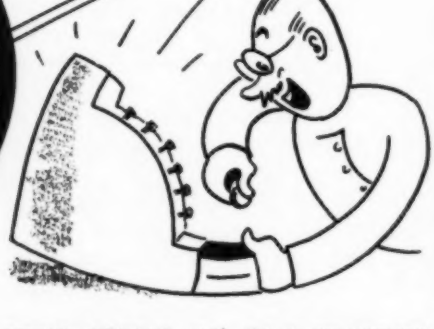
OIL'S WELL THAT ENDS WELL!

TREASURY SEC'Y. OGDEN MILLS DECIDES INSECTICIDE OILS ARE NOT FOR LUBRICATION AND THEREFORE ARE EXEMPT FROM THE NEW TAX ON LIGHT OILS *

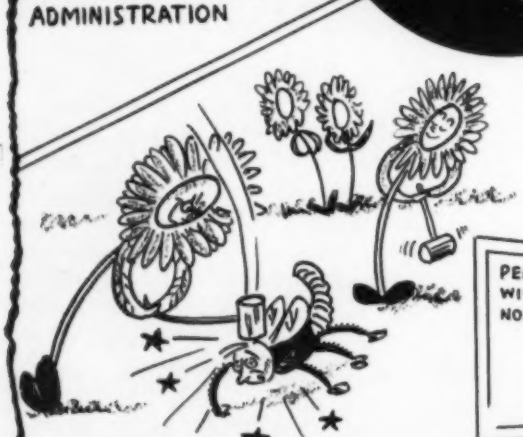
* THIS ONE MAY BE HARD TO REMEMBER— BUT— IN GENERAL THE SANITARY PRODUCTS MANUFACTURING GROUP WAS QUITE FREE FROM THE NEW '32 TAXES



U.S. USES ½ LB. OF INSECTICIDES PER CAPITA SAYS DR. C. C. McDONNELL OF THE FOOD & DRUG ADMINISTRATION



GROSS PROFIT OF 36% ON SPRAYS IS SHOWN BY NATIONAL DRUG STORE SURVEY. POWDERED INSECTICIDES SHOWED 39% MARGIN FOR DEALERS



"FLOWERS THAT KILL" THEME OF NEW AD CAMPAIGN LAUNCHED BY REX SPRAY CORP.

ANOTHER STATE IS ADDED TO THE GROWING LIST REQUIRING THE NEW PEET-GRADY TEST

ELLERY W. MANN, HEAD OF ZONITE, NAMED SEC'Y-TREAS. OF NATIONAL BETTER BUSINESS BUREAU

SO LONG

Curtail Blackplate in Cans

BLACKPLATE used in cans for soap and sanitary products was cut out for all but "dry solvents, disinfectants, germicides, insecticides, fungicides and paste soap" in WPB order M-136, issued July 22. The variety of container sizes for these products was sharply curtailed by establishing minimum sizes in each instance. Conservation Order M-136, which follows closely the pattern of the tin and terneplate restriction order, M-81, sets up two lists of products permitted to be packed in blackplate. The first list, Table A, is composed of products considered necessary for military and civilian operations. Blackplate used in cans for these products is limited to 100 per cent of the combined area of tinplate, terneplate and blackplate used in 1940.

Table B covers products permitted to be packed under the terms of order M-81, limitations for which are also specified.

Under Table A, dry solvents, including but not limited to toilet bowl and drain cleaners, are to be packed in containers no smaller than 10 ounces. Disinfectants, germicides, fungicides, and insecticides are required to be put up in minimum one gallon can sizes. Paste soap is permitted but in a can size no smaller than 3 pounds. Container sizes larger than those specified are permissible.

Other products, listed under Table III of order M-81, which are specifically prohibited from canning in blackplate include: fly spray, glycerine, polish, waxes and liquid soap.

Existing supplies of cans, already processed blackplate or cans already in the process of manufacture are not restricted. Nor do the restrictions apply to cans set aside according to provision of order M-86, nor to cans to be delivered to the Army, Navy, Maritime Commission, Lend-Lease or War-Shipping Administration. These orders, however, must be supported by preference ratings higher than ratings of A-2.

It is claimed by the WPB that orders M-136 and M-81 will save about one million tons of steel annually compared with 1941 consumption.

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Honor Hermann At Dinner

Charles Hermann, who was reported in the July issue of *Soap* as leaving McKesson & Robbins to join R. J. Prentiss & Co., was given a farewell party by employees of the company and some of his many friends in the industry at the Hotel Lafayette, New York, the evening of July 29. He was presented with a set of luggage.

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Slais With Ungerer, Chicago

J. L. Slais has been appointed manager of the Chicago office of Ungerer & Co. at 325 West Huron St. He is taking the place of George H. Becker who is now with the armed forces. Mr. Slais has had a background of many years in the essential oil business. H. J. Ahles, manufacturers' representative, 350 N. Clark St., Chicago, also handles Ungerer & Co. accounts in the mid-west as special representative.

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Report on Tin Salvage

According to figures recently released by the Tin Salvage Institute, 400,000 lbs. of critical metals, including 120 tons of tin, have been yielded since April 1, by the salvage drive. Of the metals reclaimed by the Institute some 65 per cent is tin, 14.9 per cent lead, 6.2 per cent aluminum, 7.5 per cent foil and the remainder miscellaneous metals. In peace times all this scrap would in the normal course have been thrown away.

WPB Insecticide Committee Meets

The first meeting of the recently formed Household and Industrial Insecticides Industry Advisory Committee of the War Production Board was held in the Social Security Building, Washington, D. C., on July 21. The Committee comprises J. L. Brenn of the Huntington Laboratories, Inc., Huntington, Ind.; H. W. Hamilton of the Koppers Company, White Tar Division, Kearny, N. J.; W. O. Buettner of Oscar G. Buettner Pest Control Co., Brooklyn; Paul Mayfield of Hercules Powder Co., Wilmington; John Powell of John Powell & Co., New York; L. W. Jones of McCormick & Co., Baltimore; H. D. Williams of the George L. Williams Co., Cleveland; W. J. Zick of Stanco, Inc., New York. All were present at the meeting in addition to some dozen Government officials and observers including Dr. C. J. Sunde and Dr. E. H. Griffin of the Federal Specifications Committee; Dr. F. L. Campbell of Ohio State University; D. F. Murphy of the Rohm & Haas Co., Philadelphia; Lt. R. L. Taylor of the Army & Navy Munitions Board; John N. Curlett of the Foodstuffs Branch of the W.P.B.; Donald Knapp of Chemicals Division of W.P.B.; R. L. Poirot of O.P.A. and others.

Warren Moyer of the Insecticide Unit, Chemical Branch, W.P.B., formerly vice-president of Chipman Chemical Co., Bound Brook, N. J., presided at the Committee meeting assisted by Melvin Goldberg, also of the Insecticide Unit of W.P.B. Subjects discussed by the Committee included availability, standardization and substitution of containers, emergency specifications and material limitations for insect sprays, availability and allocation of pyrethrum products, and the situation in pyrethrum replacements, chiefly synthetic insecticide materials. A special panel to investigate the possibilities of standardization of containers for liquid insecticides, comprising Messrs. Brenn, Jones and Zick, was appointed by Chairman Moyer.

The main topic of discussion by the Committee was on ways and means to conserve present stocks of pyrethrum, to determine the requirements of the armed forces and such types of insect sprays as might be suitable for their uses, to set up a stock pile of pyrethrum materials, and to speed release of frozen pyrethrum products to the insecticide industry as rapidly as conditions permit. The next meeting of the Committee will be held on August 18 in Washington.

Zuckers' Office in Church

The church - factory of the State Manufacturing Company, Cleveland, makers of cleaning, sanitation supplies and maintenance equipment, was the subject of a story in the July 4, edition of the *Cleveland Press*. Last summer, because war-time demands on business made it necessary to acquire a warehouse, the Zucker brothers, who own and operate the concern, bought the Superior Avenue Baptist Church. It was remodeled to their needs by an architect who had formerly preached several times in the church. Offices are remodeled classrooms; the former pastor's study is the chemist's office and the auditorium is used as a storage room, as is the basement. A glass display case is fashioned under the double arch that used to be the main entrance to the church. The State Manufacturing Company is operated by five brothers. Jay Zucker is president, A. H. vice - president, Rudolph secretary-treasurer and two other brothers, Charles and Fred are also associated with the firm.

Writes on Insecticides

The situation in pyrethrum and rotenone insecticides was covered in an article published in the *New York Tribune* of July 19 and written by Harold Noble of S. B. Penick & Co., New York. The present status of supplies of these two important insecticide materials was discussed by Mr. Noble, who also outlined the numerous uses for insecticides by the armed forces and in agriculture. He enumerated the insect and disease problems of our armed forces in tropical countries and the part which pyrethrum products play in their solution. Government control of these materials and the outlook in supplies were also touched upon by Mr. Noble.

Harkins To Stop Claims

Robert H. Harkins, of the Nott Mfg. Co., New York, has agreed with the Federal Trade Commission to stop claiming that his two products, "Rat-Nots" and "Rat-Not," are recommended by the U. S. Department of Agriculture; that they will drive rats outdoors; that either of the products assures the complete extermination of rats, or that either is harmless to humans, dogs, cats or livestock.

Mullin Enlists; Southland Closes

Because its secretary, F. G. Mullin has enlisted in the United States Navy, the Southland Co., Texarkana, Texas, has closed its plant for the duration. This firm manufactured brooms, mops, sweeping compounds and janitor's supplies.

Weingard Heads Refinery

Continental Refining Co., Oil City, Penna., now headed by A. B. Weingard, formerly of the Pennsylvania Refining Co., Butler, Pa., was purchased by a group of Pennsylvania oil and coal men, as announced last month, having been operating under a receivership since 1936. Mr. Weingard is president of the reorganized firm, which was founded in 1885, with Todd K. Glenn of Leechburg, Pa., vice-president and Benjamin G. McFate, Oil City attorney, secretary and treasurer. Associated with the new firm and a member of the board is Wenman A. Hicks, prominent Pittsburgh banker and coal and steel operator. William J. Anderton, connected with the firm for the past 16 years and former receiver, will continue to be associated with the company. The Continental Refining name will be retained. The company produces lubricants and other petroleum products. No petrolatums, white oils or deodorized kerosenes will be produced at the present time.

Cresylic Fly Spray—?

A manufacturer of household insect spray, unable to obtain any further stocks of pyrethrum extract at this time, talks of putting out a fly spray containing cresylic acid as the active ingredient. In the interests of his own business skin and the health of the populace, we suggest that he refrain from any such scheme.

E. J. Scarry Moves

E. J. Scarry & Co., manufacturers of sanitary chemicals, have moved from 1419 Arapahoe St. to 1217-1221 California St., Denver.

Pine Oil Prices Lowered

Ceiling prices for synthetic and natural pine oil were lowered to October 1-15, 1941 levels effective July 18, according to an OPA ruling—179—issued on July 15. Basic pine oil was set at 55 cents a gallon in tank cars f.o.b. plant; natural alpha terpineol $1.05; and light gravity pine oil 50 cents. Ceiling prices for synthetic pine oil and synthetic alpha terpineol are included in the regulation and are based on a formula which allows a manufacturer his cost of production plus the markup usually employed by him on natural pine oil and natural alpha terpineol, respectively. No jobber's differential may be added to the maximum prices. Although specific maximum prices are established for various grades, no one may sell pine oil for more than the minimum price established by Section 1499.2 of the General Maximum Price Regulation. Specific exemptions from the schedule are granted for "B3 Reagent" grade of pine oil manufactured by the Hercules Powder Company and synthetic "Beta" pine oil made by Newport Industries, Inc. They continue under the provision of the General Maximum Price Regulation.

Change Chemical Show Plans

The Sherman Hotel, Chicago, has been chosen as the new site for the second National Chemical Exposition of the Chicago Section of the American Chemical Society. Originally scheduled for the Stevens Hotel, the Army took over this hotel. The date has been moved back a week to November 24-29. No changes in the program itself are planned. The exposition will include daily conferences addressed by leaders in the chemical field, educators and other authorities. There will also be motion pictures. More than 100 exhibitors can be accommodated, according to Victor Conquest, show chairman.

Monsanto Advances Berninghaus

Julius A. Berninghaus, formerly general sales manager of the organic chemicals division of Monsanto Chemical Co., has just been made general manager of the division.

F. T. C. Issues Price Fixing Order To Agricultural Insecticide Mfrs.

THE Agricultural Insecticide & Fungicide Association, New York, 26 manufacturers of agricultural insecticides, fungicides and related products and 11 officers and directors of the association have been directed by the Federal Trade Commission to stop certain practices, "including price fixing, having the tendency and effect of restraining and suppressing competition in the sale and distribution of their products."

The corporations which the F.T.C. named in the order, all of which were members of or cooperated with the association were:

Acme White Lead and Color Works, Detroit; American Agricultural Chemical Co., American Cyanamid and Chemical Corp., Derris, Inc., George W. Cole & Co., John Powell & Co., General Chemical Co., Stauffer Chemical Co., Phelps Dodge Refining Corp., and Tennessee Corp., all of New York City; American Nicotine Co., Henderson, Ky.; California Spray Chemical Corp., Richmond, Calif.; Chipman Chemical Co., Boundbrook, N. J.; Hercules Glue Co., trading as Colloidal Products Corp., San Francisco; Commercial Chemical Co., Memphis, Tenn.; Dow Chemical Co., Midland, Mich.; E. I. duPont de Nemours and Co., Wilmington; Latimer-Goodwin Chemical Co., Grand Junction, Colo.; Niagara Sprayer and Chemical Co., Middleport, N. Y.; Nicotine Production Corp., Clarksville, Tenn.; Sherwin Williams Co., Cleveland; Southern Acid & Sulphur Co., St. Louis; Tobacco By-Products and Chemical Corp., Louisville; J. W. Woolfolk Co., Fort Valley, Ga.; Ansbacher-Siegle Corp., Brooklyn; and J. M. Taylor, E. P. Brown, and E. W. Parker, trading as Taylor Chemical Works, Ltd., Aberdeen, N. C.

The individual defendants named were: R. N. Chapman, L. S. Hitchner, June C. Heitzman, H. D. Whittlesey, H. P. Mansfield, J. B. Cary, J. H. Boyd, A. J. Flebut, R. E. Demmon, G. F. Leonard, and G. E. Riches, officers or directors of the association.

The Commission found that statistical, price and trade information had been cleared through the association since its founding in 1934, the information being submitted by the members. It included, according to the F. T. C., reports as to the sales of various types of products made by association members, including prices, terms, discounts and advance notice of future prices. It was further charged that "the respondents entered into understandings and agreements to restrict and suppress competition in the sale of their products by agreeing to fix and maintain uniform prices, terms and discounts, many of such fixed prices being on a delivered basis." The defendants are also charged with fixing prices on federal, state and municipal bids and requiring dealers to maintain certain uniform resale prices.

According to the Commission, association meetings were held for the purpose of approving dealers who were to be sold on a wholesale basis and who would be put on so-called "Distributor guides" lists as recognized distributors. The list, bearing approved names only, was then distributed among the respondents by the association.

By order of the F. T. C. price fixing must stop, lists must be disregarded and coercion or penalties must not be imposed on manufacturers who wish to set prices independently. The exchange of price lists is banned and so is the system of setting price differentials for arbitrarily designated retailers and jobbers. Likewise, interference with freely agreed upon prices between buyer and seller is to be discontinued.

Charges were dismissed against five corporations named in the original complaint: Allegheny Chemical Corp., Reading, Pa.; Antiseptic Products Co., Denver, Colo.; Fred L. Lavanburg Co., Brooklyn; and Lucas Kil-Tone Co., Philadelphia; all of which have gone out of business, and Pittsburgh Plate Glass Co., Corona Chemical Division, Milwaukee; which since 1936 has not cooperated with any of the other defendants in their activities.

◆

Set Imported Cresylic Price

The British cresylic acid ceiling price for sales by importers was set at approximately $1.10 a gallon by the O.P.A., effective August 5. Domestic cresylic, under allocation by the W.P.B., has been stabilized at about 70 cents a gallon, in tank cars. The demand for imports, even though they are of lower phenol, metacresol and paracresol content, has been actuated by the scarcity of the domestic product. This demand has caused a price rise from the 50 cent pre-war level to $1.80. Since the rise took place prior to March, 1942, prices were frozen at peak level by the Maximum Price Regulation.

The pricing formula contained in the regulation — Maximum Price Regulation No. 192, Imported Cresylic Acid, applies to sale and delivery of 60 gallons or more by importers and persons other than importers. The price is based on an ex-British works cost of 70 cents per U.S. gallon for 99-100% pale cresylic acid to which transportation, storage and insurance charges may be added by the importer. In addition to these specified costs, importers are allowed a mark-up of ten cents a gallon to cover profits and costs not provided for. The maximum price for sales by persons other than importers is determined by a similar formula, with the seller permitted to add a mark-up of five cents per gallon.

Persons holding stocks of cresylic acid which were purchased at a higher ex-works price than 70 cents can sell such inventories at prices based on actual ex-works prices even if these are higher than the 70 cent per gallon established British maximum.

◆

Fritzsche Develop War Gas Kit

As its contribution to this country's war effort, Fritzsche Brothers, Inc., New York essential oil and chemical house, has perfected a war gas identification kit. It consists of five

harmless simulated odors closely resembling the five major gases, a blower for group dissemination, an instruction chart and a cleaning fluid to remove remaining odors. The purpose of the kit is to familiarize gas instructors and their groups with the odors of war gases. Kits will be distributed gratis to accredited instructors.

Construction of National Can Corporation's new Chicago plant has recently been completed. This latest link in National Can's expanding chain of modern plants, is located at 600 West 51st Street.

Chinch Bug Control

Midwestern farmers are this year making use of a new insecticide for combatting chinch bugs. Two years of experimental testing were devoted to development of the product at the Illinois Agricultural Experiment Station, Urbana, Ill., under the direction of W. P. Flint, chief entomologist of the station. A chemical company, not identified in the official announcement, has the contract for manufacture of the insecticide and the Adams County Shipping Association, a farmers' cooperative organization at Quincy, Ill., is under contract to handle distribution for Illinois, Iowa, Kansas, Nebraska, Missouri and Indiana. Farmers are being instructed to place orders through their county farm advisers. The product, called "dinitro dust," is a substitute for creosote formerly used in chinch bug barriers but now unavailable. It is said to kill the pests where creosote merely repelled them. The dust is placed in shallow ditches around fields and the bugs die within two hours after crawling through it. It is applied at the rate of one pound to a linear rod. Users are warned to avoid inhaling it because it has injurious effects on the lungs and also causes skin irritations if it gets on the body.

Report Roach Powder Tests

Improved dust mixtures for controlling German cockroaches were discussed by J. E. Dewey in an article in the April, 1942, issue of the *Journal of Economic Entomology*. The article is based on a thesis: "The Relative Effectiveness of Dust Mixtures Against the German Cockroach," completed by Mr. Dewey at the University of Tennessee. The purpose of the tests mentioned in the paper was to find roach powders that would be more effective, less hazardous and less expensive than mixtures of sodium fluoride and pyrethrum.

Laboratory studies on the relative effectiveness of dust mixtures against the German cockroaches were conducted with 41 different materials. The average time required for a deposit of 0.81 milligrams per square centimeter of sodium fluoride to kill adult females was the basis for comparison. The results indicated that first instar nymphs are least resistant to sodium fluoride and in order of increasing resistance are the second, third, fourth and fifth instar nymphs, adult males and females, and sixth and seventh instar male and sixth and seventh instar female nymphs.

Aluminum oxide, bauxite, and Anderson's Clay, which have antidotal properties for sodium fluoride, were found to accelerate the toxic action of sodium fluoride on the German roach. A powder containing 1.4 per cent pyrethrum extract (2 per cent pyrethrins), 4 per cent sodium fluoride, 6 per cent lubricating oil and an 89 per cent pyrophyllite mixed in gasoline and dried gave a knockdown of all roaches treated and was nearly as effective as pyrethrum-sodium fluoride, 25:75 or 50:50. Pyrethrum - sodium fluoride-pyrophyllite (12.5: 25: 62.5) was about as effective as pyrethrum-sodium fluoride, 25:75 or 50:50. Sodium fluoride-2, 4-dinitro-6-cyclo-hexyl-phenol (50:50) produced leg paralysis of the roaches treated and was as effective as sodium fluoride pyrethrum. Sodium fluoride-borax (50:50) killed the roaches more quickly than sodium fluoride alone. Sodium fluoride-borax (10:90) was slightly more effective than sodium fluoride alone. Freshly hydrated lime greatly accelerated the toxicity of sodium fluoride, but it was found to be of questionable value as an activator for sodium fluoride in roach powders owing to carbonation which takes place readily upon its exposure to air. It was also determined that males are more susceptible than females to all the dusts tested.

Control of the Firebrat

Rotenone and derris are toxic and repellent to the firebrat, *Thermobia domestica*. Toxicity results from contact action. The repellent effect of rotenone-bearing materials may arise from poisoning by contact with rotenone. A dust prepared by incorporating derris to 1 per cent of rotenone in talc, clay, bentonite, etc., should be useful for protecting books, documents, paper and fabrics from attack by this insect. C. H. Richardson and E. J. Seiferle. *J. Econ. Entomol.* 34, 860-1.

Head Louse Control

Preparations suitable for head louse control are: 25 per cent lauryl thiocyanate in high-boiling paraffin oil; 50 per cent "Lethane 384 Special" in paraffin oil; and derris cream. The latter is a solution of derris extract in castor oil, emulsified with lanette wax to make a cream containing 1 per cent of rotenone and 7 per cent of derris extract. *Manufacturing Chemist* 13, 93 (1942).

PROFESSIONAL DIRECTORY

CLASSIFIED

Positions Wanted

Soap Expert, 14 years experience, wishes position as chief chemist in charge of production or research. Address Box No. 336, care *Soap & Sanitary Chemicals.*

Insecticide Man—20 years' experience in pyrethrum, rotenone, and other raw materials. Knows insecticide industry thoroughly. Good record; best references; desides position with raw material house. Address Box No. 356, care *Soap & Sanitary Chemicals.*

Soap Maker — Experienced in the manufacture of potash and soda textile soaps, all types. Plant located in Philadelphia. State experience and salary expected. Address Box No. 363, care of *Soap & Sanitary Chemicals.*

Soapmaker and Chemist with long experience making all kinds of soaps; glycerine recovery, etc. Can take full charge of plant. Address Box No. 364, care *Soap & Sanitary Chemicals.*

Positions Open

Chemist Wanted — Wanted by large manufacturer in Canada—man who has had experience in household and chemical specialties. Good opportunity for right man. Give full details, references, etc. Address Box No. 370, care *Soap & Sanitary Chemicals.*

Soap Maker and Superintendent for liquid and oil soap manufacturer. Knowledge of disinfectants desirable. Progressive sound company. Must be able to assume full responsibility including labor. State full experience, salary required. Address Box No. 369, care *Soap & Sanitary Chemicals.*

Salesmen: Position open for salesman with large Eastern petroleum and chemical concern. Territory open several Midwestern states. College education and experience in chemical industry preferred. Permanent position. Excellent opportunity for advancement. Straight salary, plus car and expenses. Replies will be treated in strictest confidence. Address Box No. 360, care *Soap & Sanitary Chemicals.*

Liquid Soap Dispensers: Manufacturer desires salesman calling on jobbing trades to handle outstanding line of Soap Dispensers. Address Box No. 362, care *Soap & Sanitary Chemicals.*

Soap Maker and Superintendent Wanted: Old established firm on Pacific Coast. State all particulars about yourself in first letter. Address Box No. 361, care *Soap & Sanitary Chemicals.*

Chemist—Male: Analytical and research. Experienced in waxes, soaps and polishes. Capable of developing formula to meet Government Specifications and Industrial Products. Take charge of Laboratory with progressive Manufacturer. Modern Equipment. Splendid Opportunity. Give full information and 'phone. Replies treated in strictest confidence. Address Box No. 359, care *Soap & Sanitary Chemicals.*

Insecticide Technical Man Wanted by well-known manufacturer of insect spray materials. Preferably entomologist or chemist with several years practical experience in the household insecticide field. Give full details, salary, etc., in confidence to Box No. 367, care *Soap & Sanitary Chemicals.*

Miscellaneous

Wanted: Sales outlets by manufacturer of High Quality Industrial Powdered Hand Soap and Cleaners to cover territories throughout United States. Prefer firms or individuals experienced in these products and acquainted with consumers. Jobbing or straight commission basis. Address Box No. 357, care *Soap & Sanitary Chemicals.*

For Sale: Houchin-Aiken Foot Presses; 600 and 1500 lb. Soap Frames; Cutting Tables; Plodders, 12 x 30 and 16 x 40 Three Roll Water Cooled Steel Mills; 4 Roll Stone Mills; Dryers; Chippers; Powder Fillers; Mixers; Grinders; Filter Presses; Disc Filters; Pumps, etc. Send for Soap Bulletin No. 402. Stein Equipment Corp., 426 Broome Street, New York City.

For Sale: 1—8 Roll Tandem Soap Mill; 4—Foote Power Soap Presses; 1—Jones Pin Die Press; 1—Ideal Amalgamator; 3—Soap Cutting Tables; 2—Slabbers; Blanchard Soap Powder Mills; Filter Presses, 12 in. to 36 in. square; Kettles, 50 to 2500 gal.; Filling, Labeling and Wrapping Machines; Pumps, Tanks, etc. "Cash Buyers of your Surplus Equipment." Brill Equipment Corporation, 183 Varick Street, New York City.

Will Purchase Immediately — Pneumatic Packaging Machine, used for chips, powder, cleanser; also dry mixers, chip dryers, crutchers, and automatic soap press. Address Box No. 365, care *Soap & Sanitary Chemicals.*

Floor Brushes — We manufacture a very complete line. Catalogue sent upon request. Flour City Brush Company, Minneapolis, Minn., or Pacific Coast Brush Co., Los Angeles, Calif.

Cresylic Acid for sale—Inquire William D. Neuberg Company, 420 Lexington Avenue, New York City. Telephone LExington 2-3324.

For Sale: Profitable mail order soap business which markets The Physicians' and Surgeons' Soap — Operated continuously since 1882—Average profits during past five years over $15,000 per year—Company does no manufacturing and owns no physical assets, except current inventories —Letter stating terms and conditions of offer and form of sealed bid will be forwarded on request—Bids will be opened September 10, 1942—The right to reject all bids is reserved — This notice is not an offer for sale or prospectus. Address Box No. 358, care *Soap & Sanitary Chemicals.*

Steel Tank for Sale: 7/16" steel plate, welded, dish bottom and top, 10 feet in diameter by 12 feet high, with 18" manhole on top and 6" bottom outlet, mounted on four steel legs. Capable of holding 29 inches vacuum. Condition as good as new. Was used for experimental runs for spraying soap powder. Also fitted with peep hole. Also have 20 tanks of various shapes and sizes: Round, ovular, rectangular and jacketted. Send for list. Located 20 miles from New York. Address Box No. 368, care of *Soap & Sanitary Chemicals.*

For Sale—Clean open steel kettle six feet diameter by three feet deep, dished boilerhead bottom, capacity 640 gallons. Reversing mixer, motor driven, instantly set at any point from center to sidewall, removable entirely in a minute. Creative Chemical Company, 4618 Friendship Avenue, Pittsburgh, Pa.

Will Purchase obsolete cans, plain or lithographed. Also job lots of bottles and caps. Mail samples and particulars to A.M.R. Chemical Co., Inc., 985 East 35th Street, Brooklyn, N. Y.

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Kerosene-Rotenone Spray

Some of the problems attending use of kerosene-rotenone sprays in the control of red scale on citrus fruits are discussed by Walter Ebeling, Citrus Experiment Station, Riverside, Calif., in the May, 1942, issue of *The California Citrograph.* Rather extensive trials have been made of kerosene-rotenone sprays at dosages ranging from 8 to 10 per cent. Results varied from highly satisfactory kills which gave marked improvement of scale control to results which were unsatisfactory, particularly on the fruit. Trees most susceptible to injury appear to be those between the ages of five and twelve years. Mounding of earth about the trunks before spraying, followed by removal after the spray application, was found to be desirable to prevent injury to the bark beneath the soil line. Experiments with kerosene containing a solute that greatly reduces rate of penetration into the bark also offer promise.

...Official Test Insecticide

STOCKS of the 1942 Official Test Insecticide are available for immediate shipment from the office of this Association. The 1942 O.T.I. is required for all current testing and grading of fly sprays by the official Peet-Grady Method. The 1942 O.T.I. will remain official until June 1, 1943.

Directions for use of the O.T.I. and the technique of the Peet-Grady Method are given in a booklet, a copy of which is included in each carton of O.T.I.

The O.T.I. is available at $5.00 per dozen bottles, plus shipping costs, to members of this Association. To non-members, there is an additional service charge of $1.00 per dozen bottles. Single bottles are $1.00 each. Check with order is required.

▼

National Association of Insecticide & Disinfectant Manufacturers, Inc.

110 East 42nd Street — New York

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INDEX TO ADVERTISERS

* For further details see announcement in 1942 SOAP BLUE BOOK

Every effort is made to keep this index free of errors, but no responsibility is assumed for any omissions.

Tale Ends

THINGS have been popping a mile a minute over the past month,—orders, restrictions, freezes, etc. If you turn your back for five minutes, you miss something!

* * *

Why does soap deserve all this special attention from Washington? The first order yet issued by O.P.A. freezing size and quality of any commodity,—Commodity Practices Regulation No. 1,—applied to soap. When it comes to Government attention, soap certainly seems to attract the spotlight.

* * *

If reports from industrial areas are a criterion, there is developing a healthy demand for these protective hand pastes which are applied by factory workers in advance and ease the later removal of grime. Women workers in plants are reputed to account for the stimulus to this demand.

* * *

A special deal and free-goods offer is noted on the mid-west horizon in connection with two well-known soap products. We thought that any such were out for the duration, but our guess was wrong. Maybe soap sales have dropped off more than we figured.

* * *

After the advance rumblings a few weeks back as to the imminent possibility of oil and fat rationing for industrial purposes, there have been no further official Washington statements on the possibility of such a development. The soap industry has also noted with encouragement that warnings several months back as to possible necessity of limiting glycerin content of finished soaps have not up to this point passed the point of off-stage whispers. Perhaps further government study has disclosed the fact that oil and fat, as well as glycerin stocks, are ample at the moment to make such restrictive orders unnecessary.

LILAC
...at Low Cost

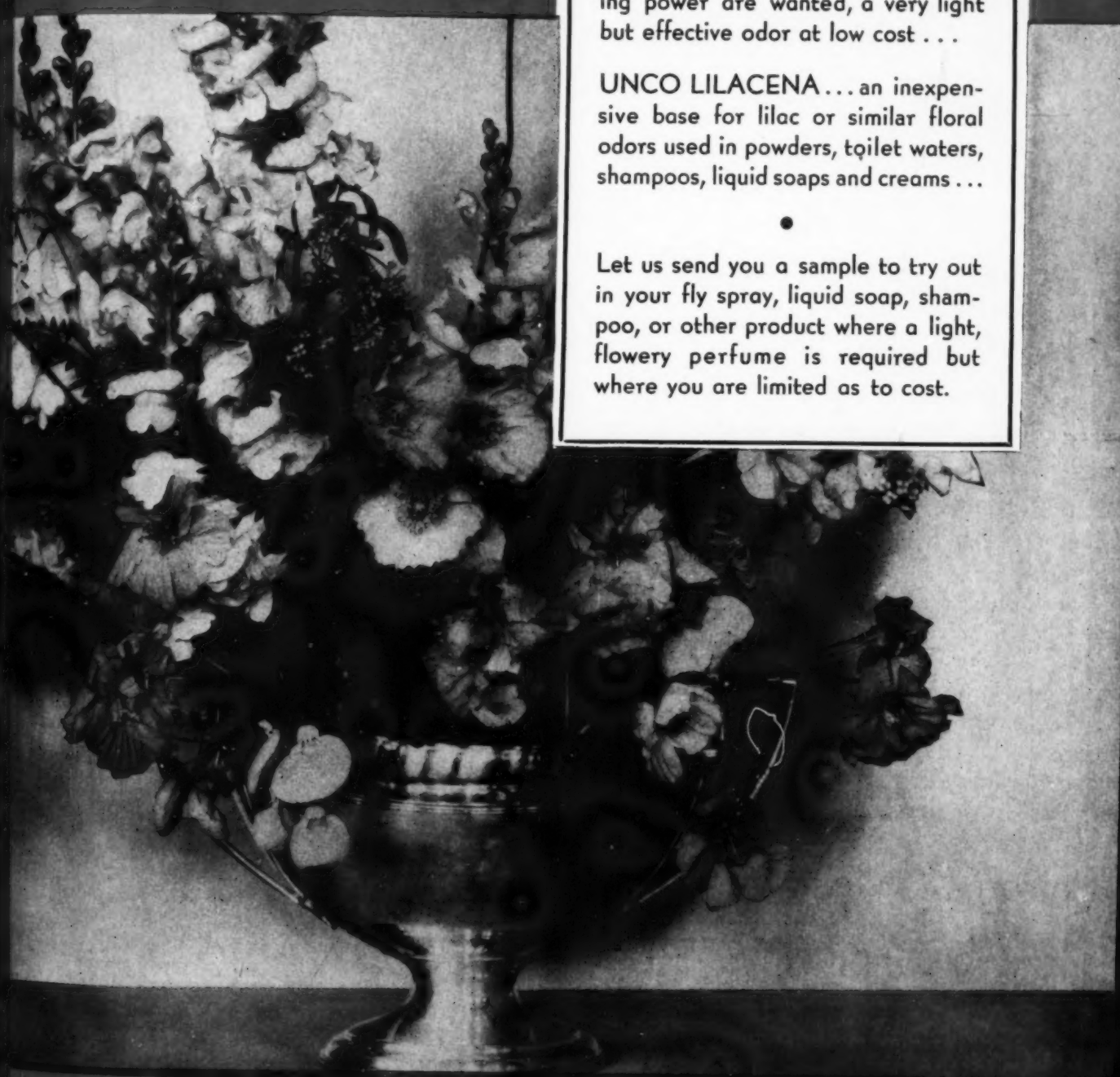
UNCO LILACENA . . . a moderately priced lilac-type perfume oil with a wide range of uses . . .

UNCO LILACENA . . . for the inexpensive perfuming of fly sprays and other liquid insecticides where true flower character and excellent covering power are wanted, a very light but effective odor at low cost . . .

UNCO LILACENA . . . an inexpensive base for lilac or similar floral odors used in powders, toilet waters, shampoos, liquid soaps and creams . . .

•

Let us send you a sample to try out in your fly spray, liquid soap, shampoo, or other product where a light, flowery perfume is required but where you are limited as to cost.



UNGERER & CO.

161 Sixth Avenue New York, N. Y.